Deposition of

Brian W. Anthony

April 17, 2026

Volume I

Samsung Electronics Co.

vs.

Omni Medsci, Inc.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., FOSSIL GROUP, INC., FOSSIL STORES I, INC., FOSSIL PARTNERS, L.P., OURA HEALTH OY, AND ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD.,

Petitioners,

v.

OMNI MEDSCI

Patent Owner.

Inter Partes Review No. IPR2025-01250
Inter Partes Review No. IPR2025-01251
Inter Partes Review No. IPR2025-01252
Inter Partes Review No. IPR2025-01253
Inter Partes Review No. IPR2025-01254

DEPOSITION OF BRIAN W. ANTHONY
VOLUME I
HELD VIA VIDEOCONFERENCE
FRIDAY, APRIL 17, 2026
6:04 A.M. - 2:29 P.M.

STENOGRAPHICALLY REPORTED BY:
CHERYL ASADA
CA CSR NO. 13496
JOB NO. 10188949

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DEPOSITION OF BRIAN W. ANTHONY, VOLUME I, HELD VIA VIDEOCONFERENCE, TAKEN ON BEHALF OF THE PATENT OWNER, COMMENCING AT 6:04 A.M. AND CONCLUDING AT 2:29 P.M., FRIDAY, APRIL 17, 2026, BEFORE CHERYL ASADA, CALIFORNIA CERTIFIED SHORTHAND REPORTER NO. 13496.

* * *

A P P E A R A N C E S (ALL PARTIES APPEARING REMOTELY):

FOR THE PETITIONER SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC.:

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FOR THE PATENT OWNER:

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I N D E X

W I T N E S S:

BRIAN W. ANTHONY PAGE
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-AFTERNOON SESSION-
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INFORMATION REQUESTED:
(NONE)

QUESTIONS INSTRUCTED NOT TO ANSWER:
(NONE)

PREVIOUSLY MARKED EXHIBITS:

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PREVIOUSLY MARKED EXHIBITS (CONTINUED):

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HELD VIA VIDEOCONFERENCE
FRIDAY, APRIL 17, 2026
6:04 A.M. - 2:29 P.M.
* * *

THE COURT REPORTER: In accordance with AB 3252, we are on the record. My name is Cheryl Asada, CSR No. 13496. I will now swear in the witness.

BRIAN W. ANTHONY,
HAVING BEEN DULY ADMINISTERED AN OATH,
WAS THEREUPON EXAMINED AND TESTIFIED AS FOLLOWS:

THE WITNESS: Yes.
THE COURT REPORTER: Thank you.

EXAMINATION

BY MR. CHRISTOPHER:

Q. Good morning. Can you please state your name for the record?
A. Brian W. Anthony.
Q. And, Dr. Anthony, is there any reason why you cannot give complete, truthful, and accurate testimony today?
A. No.
Q. Okay. And I understand you have been deposed before. Is that correct?

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A. Correct.
Q. Approximately how many times have you been deposed?
A. Approximately 15 times.
Q. Okay. Well, when was the last time you were deposed?
A. Probably about six -- five, six months ago.
Q. Okay. So I suspect you're familiar with the process, but just as a reminder, we have a court reporter here today writing down everything we say, so please remember: Verbalize your answers, please try to pause after my question so we're not talking over each other. It helps the court reporter out. All make sense?
A. Yes.
Q. Okay. And then from time to time, you know, your counsel may object to some questions. You should still answer unless he instructs you not to answer the question. Make sense?
A. Yes.
Q. Okay. And if you need me to clarify a question, you know, please let me know. I'll do my best to clarify; otherwise, I'm going to assume you understand the question and you can answer it. Is that fair?
A. Yes.
Q. And then, lastly, in our ground rules, I'm sure

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you know this. If you need a break, just let me know, you're not a prisoner. My only caveat to that is if a question is pending, I'd ask that you answer the question and then we can take a break. Sound fair?
A. Yes.
Q. Okay. And I know we just mentioned this off the record, but while we're on the record, where are you physically located for today's deposition?
A. Cambridge, Massachusetts.
Q. Are you at home or at the office?
A. I'm in my -- I'm in my office at MIT.
Q. Okay. Anyone else in the room with you today?
A. No.
Q. Do you have any programs open on your computer other than the Zoom application you're using to connect to the deposition?
A. No.
Q. Okay. Dr. Anthony, do you understand that you're here today to testify regarding five declarations you authored that were submitted in five proceedings before the Patent Trial and Appeal Board -- or PTAB?
A. Yes.
Q. Okay. Did you do anything to prepare for today's deposition?
A. Yes.

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1 **Q. Can you please describe everything you did to**
2 **prepare for today's deposition?**
3 A. I had meetings with counsel, reviewed my
4 declarations, the primary references that I cite.
5 **Q. Okay. You mentioned you had meetings with**
6 **counsel. I'm not interested in anything you talked about**
7 **with counsel, but can you tell me which counsel you met**
8 **with?**
9 A. Mr. Kim and his colleagues.
10 **Q. All right. Do you recall the names of**
11 **Mr. Kim's colleagues?**
12 A. I forget Patrick's last name.
13 **Q. Fair. Fair enough. You mentioned you reviewed**
14 **your declarations and the primary references you cited.**
15 **Did you review any other documents in**
16 **preparation for today's deposition?**
17 MR. KIM: Objection. Privilege. Instruct the
18 witness to not disclose any attorney-client privileged
19 communication.
20 You may answer "yes" or "no."
21 THE WITNESS: Mr. Christopher, can you repeat
22 the question?
23 BY MR. CHRISTOPHER:
24 **Q. Sure. You mentioned that you had reviewed your**
25 **prior declaration -- you -- strike that?**

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1 **Let's start over.**
2 **You mentioned that you had reviewed your**
3 **declarations and the primary references in preparation**
4 **for today's deposition.**
5 **Do you remember that?**
6 A. Yes.
7 **Q. And my -- my question was did you review any**
8 **other documents in preparation for today's deposition?**
9 MR. KIM: Same objection.
10 THE WITNESS: Yes.
11 BY MR. CHRISTOPHER:
12 **Q. Which documents did you review?**
13 A. I reviewed my -- my declarations, the
14 references, the patents, the prior -- I also cite my
15 prior declarations in prior cases, skimmed through those.
16 Those are the -- the dominant references.
17 **Q. Okay. So as a matter of housekeeping, I -- I**
18 **plan to put our exhibits today in the Zoom chat.**
19 **You're -- you're free to use those and open them up. If**
20 **you have your own, you know, local electronic copies, I'm**
21 **okay with you using them.**
22 **Do you -- do you have a copy you would prefer**
23 **to use on your computer?**
24 A. I have received clean digital copies from
25 Mr. Kim, and I also printed -- not all of them, but I

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1 printed out my declarations and some of the other.
2 Sometimes I find it easier with my eyes to look at the
3 paper version after -- or sometimes the digital.
4 **Q. Sure. So I'll -- I'll put them in the Zoom**
5 **chat. If you want to look at your own electronic copies,**
6 **I'm find with that based on your -- your representation**
7 **that they're clean copies.**
8 **So let's start. I'm going to show you in our**
9 **Zoom chat what's been previously marked as Exhibit 1001**
10 **in IPR2025-01250 [sic].**
11 MR. CHRISTOPHER: Let me know when you have
12 that open.
13 THE WITNESS: Okay. Yes.
14 BY MR. CHRISTOPHER:
15 **Q. Okay. And do you recognize this as U.S.**
16 **Patent No. 10,874,304?**
17 A. Yes. I refer to it -- I know it as '304, but
18 yes.
19 **Q. Perfect, because that was my next question.**
20 **Understandable to you if we refer to that as**
21 **the '304 patent?**
22 A. Perfectly acceptable.
23 **Q. Great. And you've reviewed the 3 -- strike**
24 **that. I had the numbers backwards.**
25 **Have you reviewed the '533 patent?**

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1 A. This is the '304. Yes.
2 **Q. Oh, excuse me. I've got it -- I -- I meant to**
3 **show you the '533 first. So let's -- let's back up.**
4 **This is -- for the record, we're looking at**
5 **Exhibit 1001 in IPR2025-01251, just for the record.**
6 (Exhibit 1001 in IPR2025-01251 was
7 previously marked.)
8 BY MR. CHRISTOPHER:
9 **Q. Okay. And we recognize this as the**
10 **'304 patent. Correct?**
11 A. Correct.
12 **Q. Okay. And did you review the '304 patent in**
13 **its entirety in forming your opinions?**
14 A. Yes.
15 **Q. Okay. You reviewed the specification. Right?**
16 A. Yes.
17 **Q. Okay. And you understood the subject matter of**
18 **the '304 patent. Correct?**
19 A. Yes.
20 **Q. Okay. Now, I'm going to show you what's been**
21 **marked previously in the proceedings as Exhibit 1003.**
22 **This is from IPR2025-01251.**
23 **Let me know when you have that available to**
24 **you.**
25 ///

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(Exhibit 1003 in IPR2025-01251 was previously marked.)
THE WITNESS: Yes.
BY MR. CHRISTOPHER:
Q. Perfect. And do you recognize Exhibit 1003 from IPR2025-01251 as your declaration concerning the '304 patent?
A. Yes.
Q. Great. And on the very first page, at the bottom, is that your signature?
A. Yes.
Q. And this declaration was executed on August 5, 2025. Correct?
A. Correct.
Q. Okay. How long did you spend preparing this declaration concerning the '304 patent?
A. I don't remember the exact amount of time, but order of 20, 30 hours, certainly over many days.
Q. Now, understood. I'm not looking down to the -- the minute.
Did you write this declaration concerning the '304 patent?
A. This is my declaration, these are my opinions. I didn't necessarily type every word, but it certainly -- they're my opinions.

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Q. And when you say you didn't necessarily type every word, who would have typed any words that you didn't type in this declaration?
MR. KIM: Objection. Privileged.
I instruct the witness to not disclose any attorney-client privileged communication, but you may answer the question.
THE WITNESS: I had many conversations with -- with counsel, including Mr. Kim, expressing my opinions. And sometimes he would capture my opinions and put them into a document form and then I would review them and edit them and -- in forming the document here that is my -- all my opinions.
BY MR. CHRISTOPHER:
Q. And you mentioned you worked with Mr. Kim. Again, I'm not interested in any conversations that you had with any attorneys.
But did you work with any other attorneys in preparing your declaration concerning the '304 patent?
MR. KIM: Same objection.
To the extent you recall any of their names, you may answer the question.
THE WITNESS: I do -- I certainly remember Mr. Kim's name. I do not recall the other names of the other counsel on the -- on our various conversations.

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BY MR. CHRISTOPHER:
Q. Okay. And at the top of the first page, where we were first looking, there's a -- a -- do you know where it says "Petitioners"?
A. Yes.
Q. And there's a number of entities listed above "Petitioners."
Do you see those?
A. Yes.
Q. And you mentioned you worked with Mr. Kim, who I understand is a counsel for Samsung.
Is that your understanding?
A. That is my understanding.
Q. Did you work with any attorneys -- again, I'm not looking for the substance of any communications. This is a "yes" or "no."
Did you work with any attorneys from any of the other non-Samsung entity petitioners in the course of preparing your declaration for the '304 patent?
MR. KIM: Same objection. Privileged.
But you may answer "yes" or "no."
THE WITNESS: Mr. Christopher, can you repeat the question?
BY MR. CHRISTOPHER:
Q. Sure.

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Did you work with any attorneys from any of the non-Samsung entities in the course of preparing your declaration concerning the '304 patent?
A. No.
Q. Great. What about in preparation for today's deposition? Did you speak with any attorneys from any non-Samsung entities in preparation for the deposition?
MR. KIM: Same objection. Privileged.
You may answer "yes" or "no."
THE WITNESS: No.
BY MR. CHRISTOPHER:
Q. Now, if you scroll down to Paragraph 9 -- this is maybe easier if I give you the PDF page. PDF Page 9, Paragraph 9 of your declaration, concerning the '304 patent.
Let me know when you're there.
A. Okay.
Q. All right. And you mentioned here in paragraph 9 (as read):
"I noted that I previously submitted expert declarations in support of a prior IPR challenging limitations of Patent Numbers 9,651,533 (the '533 patent) and 10,517,484 (the '484 patent)."
Do you see that?

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A. Yes.
Q. And you were retained on behalf of Apple for those prior declarations. Correct?
A. That is correct.
Q. Okay. And just as a matter of housekeeping, I'm going to show you these so we have them. I'm going to show you what has been previously marked as Exhibit 1004 in each of the proceedings.
(Exhibit 1004 in each of the proceedings was previously marked.)
BY MR. CHRISTOPHER:
Q. Let me know when you have that available.
MR. KIM: Also, you mentioned that it's 1004 in each of the proceedings. So I'm missing 1004 in the IPR202510 -- 125 -- no, sorry. Yes, 1251 only.
MR. CHRISTOPHER: Let me double-check that because I believe it's cited in multiple IPRs. Maybe different exhibit number.
I'm seeing it as 1004 in IPR2025-01250, in the 51.
MR. KIM: Okay. You're saying that this same document was cited as 1004 in all the IPRs. I just wanted to confirm whether you're going to upload all those documents.
MR. CHRISTOPHER: No. It's exhibit -- it's the

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same Exhibit 1004 in all five proceedings. I think --
MR. KIM: Okay.
MR. CHRISTOPHER: Your -- your point is that maybe the footer has the -- has the 51-case number, but it's the same document in all five proceedings.
MR. KIM: Understood. Thank you for the clarification.
BY MR. CHRISTOPHER:
Q. All right. Dr. Anthony, do you have Exhibit 1004?
A. Yes. This is the -- my declaration for the -- what I call the '533.
Q. Your -- your prior declaration for the '533?
A. Right.
Q. Correct.
A. Right.
Q. And this declaration was from 2019, it was executed. Correct?
If you need a refresher, it's at the bottom, PDF Page 101.
A. Yes, executed April 10, 2019.
Q. Perfect. And now, I'm also going to show you what has been previously marked as Exhibit 1010 in each of the five proceedings.
///

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(Exhibit 1010 in each of the proceedings was previously marked.)
BY MR. CHRISTOPHER:
Q. And just for the record, as we just looked at for the '533, the footer on this document may be for a particular -- one of the five proceedings, but it's the same Exhibit 1010 in each of the proceedings.
Do you recognize the Exhibit 1010?
A. Yes. This appears to be my prior declaration for what I refer to as the '484 patent.
Q. Great. Continuing along, I'm going to show you now, what's been submitted as Exhibit 1001 in IPR2025-01250.
(Exhibit 1001 in IPR2025-01250 was previously marked.)
BY MR. CHRISTOPHER:
Q. Let me know when you have that available.
A. Zoom is saying it's already downloaded, but let's see.
Q. Do you need me to resend it?
A. No. I'm just making sure I'm not overwriting something that -- I changed the name here. It had a dash.
Q. Oh.
A. So this is the '533 -- whatever is the

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'533 patent, correct.
Q. Perfect.
A. Yeah.
Q. And then I'm going to show you what has been previously marked as Exhibit 1003 in IPR2025-01250.
Do you recognize Exhibit 1003 from the 1250 proceeding as your declaration concerning the '533 patent?
(Exhibit 1003 in IPR2025-01250 was previously marked.)
THE WITNESS: This is my declaration of the -- this -- what I referred to as the '533.
BY MR. CHRISTOPHER:
Q. Okay. And just to make sure we have our terminology straight, is it understandable to you if I refer to the 2019 declaration concerning the '533 patent as your prior '533 declaration?
A. Yes.
Q. Okay. And on the first page, Exhibit 1003, from the 1250 proceeding, is that your signature?
A. The 1250 proceeding -- the 5 -- yes. Yes.
Q. Okay. And this declaration was executed on August 5, 2025. Correct?
A. Correct.
Q. Okay. And approximately how long did you spend

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1 on your declaration concerning the '533 patent?
2 A. I'd say, roughly, the same amount of time.
3 Q. Did you work with -- again, I'm not looking for
4 the substance of any communication.
5 Did you work with the same counsel in the
6 course of preparing this declaration for the '533 patent?
7 MR. KIM: Objection. Privileged.
8 You may answer "yes" or "no."
9 THE WITNESS: Yes.
10 BY MR. CHRISTOPHER:
11 Q. Okay. We have three more. So I'm going to
12 show you what's been submitted as Exhibit 1001 in
13 IPR2025-0252 [sic].
14 Do you recognize this as the '455 patent?
15 (Exhibit 1001 in IPR2025-01252 was
16 previously marked.)
17 THE WITNESS: Yes. This is the '455 patent,
18 yes.
19 BY MR. CHRISTOPHER:
20 Q. All right. Now, I'm showing you in our Zoom
21 chat Exhibit 1003, in IPR2025-01252.
22 Do you recognize Exhibit 1003 as your
23 declaration concerning the '455 patent?
24 A. My declaration of the '455, signed August 5,
25 2025.

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1 Q. Perfect. Approximately how long did you spend
2 preparing your declaration concerning the '455 patent?
3 A. I'd say roughly the same amount of time.
4 Q. And fair to say roughly the same preparation
5 process as the other two declarations?
6 A. Yes.
7 Q. Perfect. All right. I'm going to show you
8 now -- we have two more. Exhibit 1001 -- hold on. I
9 skipped one. It will be the latest one I sent you. In
10 the chat, this is --
11 A. You just uploaded -- you uploaded two?
12 Q. Yeah. Yeah. The second one, if you could, for
13 me.
14 A. Okay.
15 Q. This is Exhibit 1001 in IPR2025-01253.
16 (Exhibit 1001 in IPR2025-01253 was
17 previously marked.)
18 BY MR. CHRISTOPHER:
19 Q. Let me know when you have that open.
20 A. This is the '790 patent. Correct?
21 Q. That was -- that was my question for you.
22 Do you recognize Exhibit 1001 as the -- as the
23 '790 patent?
24 A. Yes. Just confirming that's the one you meant
25 for me to --

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1 Q. That is the one I meant for you to look at.
2 We're almost done with these, so you'll have them all in
3 front of you.
4 So now I'm showing you Exhibit 1003 from
5 IPR2025-01253.
6 (Exhibit 1003 in IPR2025-01253 was
7 previously marked.)
8 BY MR. CHRISTOPHER:
9 Q. Do you recognize Exhibit 1003 as your
10 declaration concerning the '790 patent?
11 A. All right. The document that you just uploaded
12 seems to be the same.
13 Q. Let me double --
14 A. What's the exhibit number that I'm looking for
15 in the chat now?
16 Q. It should be Exhibit 1003. At least in my
17 screen, it's the very last thing in the chat. There's an
18 Exhibit 1003. This is from IPR2025-01253.
19 Let me know if you're seeing something
20 different. I can resend it.
21 A. Okay. So this is my '790 declaration, if
22 that's what you meant for me to be downloading.
23 Q. Yes. Your -- you recognize this Exhibit 1003
24 as your declaration concerning the '790 patent?
25 A. Yes.

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1 Q. This is also dated August 5th, 2025. Correct?
2 A. Yes.
3 Q. And you spent approximately same amount of time
4 on this declaration as the other three we've previously
5 looked at?
6 A. Yes.
7 Q. Okay. Last one. I jumped the gun on this one,
8 so I'm going to resend it. Show you what's been
9 previously submitted as Exhibit 1001 in IPR2025-01254.
10 (Exhibit 1001 in IPR2025-01254 was
11 previously marked.)
12 BY MR. CHRISTOPHER:
13 Q. Let me know when you have that open?
14 A. This is the '475 patent.
15 Q. Correct. Good. Got that in front of you.
16 And now I'm going to show you what's been
17 marked as Exhibit 1003 in IPR2025-01254.
18 When you have that open, let me know, do you
19 recognize that as your declaration concerning the
20 '475 patent?
21 A. This is my declaration for the '475 patent.
22 Q. Perfect. So you should now have five patents
23 available to you: The '533, the '304, the '455, the
24 '475, and the '790. Correct?
25 A. '533, '790, '304 -- yes.

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1 **Q. And you -- you have in front of you five**
2 **declarations, one corresponding to each of those patents?**
3 A. Yes.
4 **Q. And then there's two prior declarations, one**
5 **for the '533, one for the '484. Right?**
6 A. Correct.
7 **Q. Okay. Can you tell me, just in your own words,**
8 **what -- what are the five patents -- the '533, the '304,**
9 **the '455, '475, and '790, what are those patents directed**
10 **to?**
11 MR. KIM: Objection, form.
12 THE WITNESS: So as I describe in my
13 declaration, for example, for the '533 patent on Page 19
14 related to a paragraph 45 of physiological measurement
15 system, including a measurement -- a wearable measurement
16 device. So physiological measurement systems.
17 BY MR. CHRISTOPHER:
18 **Q. Okay. Do you understand that the five**
19 **declarations that you authored were submitted by**
20 **petitioners in support of five corresponding petitions**
21 **for inter partes review for each of the patents?**
22 A. Yes.
23 **Q. Have you reviewed the petitions for**
24 **inter partes review of each of the five patents?**
25 A. I don't recall having reviewed those, no.

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1 **Q. Okay. And are you aware that patent owner**
2 **filed a preliminary response responding to each of those**
3 **five petitions?**
4 A. Yes.
5 **Q. Have you reviewed any of the patent owner**
6 **preliminary responses?**
7 A. I believe I -- not revealing any
8 attorney-client privileges, yes, but, you know, I've, in
9 preparation, understood them from Mr. Kim.
10 **Q. And have you actually personally read any of**
11 **the preliminary responses?**
12 A. I may have skimmed through them, but I did not
13 read them in detail, no.
14 **Q. Okay. And are you aware that patent owner**
15 **filed declarations from a Dr. Igor Efinov in support of**
16 **each of those preliminary responses?**
17 A. I'm not familiar with the name, but I'm sure
18 that patent owner has -- has a expert submit opinions as
19 well.
20 **Q. Have you reviewed any of the expert**
21 **declarations that patent owner submitted in support of**
22 **its preliminary responses?**
23 A. I'm sorry, can you repeat the question?
24 **Q. Sure.**
25 **Have you reviewed any expert declarations that**

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1 **patent owner submitted with its preliminary responses**
2 **from the five proceedings?**
3 A. I'm referring to my declaration and the
4 exhibits at the end that I referred to in forming my
5 opinions and tried to list everything that I reviewed
6 there.
7 **Q. I'll represent to you that any expert**
8 **declarations that were submitted with the preliminary**
9 **responses were created after your five declarations. So**
10 **my question is more in preparation for the deposition**
11 **today, subsequent to executing your declarations, have**
12 **you reviewed any declarations offered by patent owner in**
13 **support of its preliminary responses?**
14 MR. KIM: Objection. Privileged. I instruct
15 the witness to not disclose any attorney-client privilege
16 communication.
17 But you may answer "yes" or "no" only.
18 MR. CHRISTOPHER: There's nothing privileged
19 about that, Counsel.
20 MR. KIM: Well, you asked about "in your
21 preparation for this deposition." So I'm allowing the
22 witness to answer "yes" or "no."
23 MR. CHRISTOPHER: Okay.
24 BY MR. CHRISTOPHER:
25 **Q. Please answer.**

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1 A. Mr. Christopher, can you repeat the question?
2 **Q. Sure.**
3 **In preparation for today's deposition, did you**
4 **review any expert declarations that patent owner**
5 **submitted in support of its preliminary responses for the**
6 **five IPR proceedings?**
7 MR. KIM: Same objection.
8 But again you may answer "yes" or "no" only.
9 THE WITNESS: No.
10 BY MR. CHRISTOPHER:
11 **Q. Okay. Are you aware that another entity called**
12 **Whoop, Inc. filed IPR petitions challenging the '533,**
13 **'304, and '455 patents?**
14 A. I'm not sure if they submitted -- I do not --
15 I'm not sure. I've heard -- I know Whoop is -- I've
16 heard of Whoop. I know -- but I'm not sure what --
17 what -- yes, I'm not sure.
18 **Q. Sure. So you're not aware of whether Whoop had**
19 **filed its own IPRs challenging some of the patents that**
20 **you've opined on?**
21 A. Correct.
22 **Q. Okay. All right. I'm going to show you what**
23 **has been marked as Exhibit 1025 in each of the five**
24 **proceedings. As counsel has pointed out, the footer may**
25 **be for one particular proceeding, but it is the same**

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1 **Exhibit 1025 in each proceeding.**
2 (Exhibit 1025 in each of the proceedings
3 was previously marked.)
4 BY MR. CHRISTOPHER:
5 **Q. Do you recognize Exhibit 1025 as the Lisogurski**
6 **reference?**
7 A. Yes. This is -- yes, Lisogurski.
8 **Q. And you've opined on the Lisogurski reference**
9 **in each of the -- each of your five declarations.**
10 **Correct?**
11 A. Correct.
12 **Q. And you also opined on Lisogurski in the -- in**
13 **the two prior declarations, the prior '484 and the prior**
14 **'533. Correct?**
15 A. Correct.
16 **Q. Okay. And you've reviewed Lisogurski.**
17 **Correct?**
18 A. Correct.
19 **Q. Did you consider Lisogurski in its entirety**
20 **when forming your opinions expressed in your**
21 **declarations?**
22 A. I considered Lisogurski and the teachings of
23 Lisogurski and how a POSITA would understand what's
24 taught by Lisogurski.
25 **Q. Understood.**

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1 **Did you consider -- let me ask you this: When**
2 **you reviewed Lisogurski, did you read it cover to cover?**
3 A. Yes.
4 **Q. And so did you consider Lisogurski in its**
5 **entirety in forming those opinions regarding the patents?**
6 A. Yes. And as I said, in the teaching of
7 Lisogurski and how a POSITA would understand what is
8 taught by Lisogurski.
9 **Q. Okay. If you could turn to Column 3 of**
10 **Lisogurski. This is Page 34 of the PDF. I would direct**
11 **your attention to Column 3, starting at Line 61, very**
12 **bottom of the left-hand column.**
13 **Let me know when you're there.**
14 A. Column 3. What line, please?
15 **Q. 61.**
16 A. Okay.
17 **Q. Okay. And so starting at Line 61, Lisogurski**
18 **discloses (as read):**
19 **"An oximeter is a medical device that**
20 **may determine the oxygen saturation of an**
21 **analyzed tissue. One common type of**
22 **oximeter is a pulse oximeter which may**
23 **non-invasively measure the oxygen**
24 saturation of a patient's blood (as
25 opposed to measuring oxygen saturation

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1 directly by analyzing a blood sample
2 taken from the patient)."
3 Do you see that?
4 A. Yes.
5 **Q. Okay. So according to Lisogurski, a pulse**
6 **oximeter is a device that measures the ratio of**
7 **oxygenated and deoxygenated hemoglobin. Correct?**
8 MR. KIM: Objection, form.
9 THE WITNESS: Well, I mean, I -- I opine and
10 describe Lisogurski in -- in detail in -- in all of my
11 declarations, I believe, but, for example, in the '533 at
12 paragraph 76 describing that Lisogurski -- Lisogurski
13 discloses a medical device, specifically a physiological
14 monitoring system that monitors one or more physiological
15 parameters of a patient, such sensors may include a pulse
16 oximeter with a light sensor on a patient's fingertip. A
17 person of ordinary skill in the art would have understood
18 that disclosure as being consistent with standard
19 established physiological monitoring techniques. It's in
20 paragraph 76, so...
21 BY MR. CHRISTOPHER:
22 **Q. Sure.**
23 A. And I -- and I further describe the background
24 overview of -- of Lisogurski in subsequent paragraphs.
25 **Q. Sure. Understood. You have lots of opinions**

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1 **on Lisogurski. I'm just focused for now just on that**
2 **paragraph we read, starting at Line 61, the description**
3 **of a pulse oximeter. My question was: According to**
4 **Lisogurski, a pulse oximeter measures the ratio of**
5 **oxygenated and deoxygenated hemoglobin. Correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, I wasn't opining upon
8 individual paragraphs in isolation in forming my
9 opinions, but as you described there, Lisogurski, as --
10 as you read, describes a oximeter as a medical device
11 that determines oxygen saturation of an analyzed tissue.
12 One common type of oximeter is a pulse oximeter, which
13 may non-invasively measure the oxygen saturation of a
14 patient's blood.
15 BY MR. CHRISTOPHER:
16 **Q. A person of skill in the art would know we're**
17 **talking about measuring oxygen saturation that's measured**
18 **by taking a ratio of oxygenated and deoxygenated**
19 **hemoglobin. Correct?**
20 MR. KIM: Objection. Form and scope.
21 THE WITNESS: So for example, I describe in
22 Paragraph 79 in my '533 declaration, a person of ordinary
23 skill in the art would have been familiar with the
24 well-established physical principle, underlying pulse
25 oximetry. That is changes in absorption, reflection of

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1 selected wavelengths related to and can be used to
2 determine the physiological parameters like oxygen
3 saturation levels in arterial blood.
4 Furthermore, the conversion of the detected
5 optical signals onto electric signals and their
6 subsequent processing will yield relevant physiological
7 parameters in our routine operations and align with
8 conventional designs and wearable medical sensors used at
9 the time.
10 BY MR. CHRISTOPHER:
11 **Q. So you mentioned determining physiological**
12 **parameters like oxygen saturation.**
13 **How would a person of skill in the art**
14 **understand that a physiological parameter like oxygen**
15 **saturation would be determined by a pulse oximeter?**
16 A. Well, as I -- as I described, I mean, that's
17 the -- what a -- a POSITA would be familiar with how a
18 pulse oximeter works in looking at multiple wavelengths
19 and the relative absorption and -- and reflection of
20 oxygenated and deoxygenated blood. And it is used to
21 estimate the -- the relative ratio of -- of the two.
22 **Q. And the relative ratio of the two is used to**
23 **estimate oxygen saturation. Is that correct?**
24 A. Yes. The oxygen saturation I described,
25 physiological parameters like oxygen saturation levels in

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1 arterial blood, as I described in Paragraph 79.
2 **Q. Okay. And if you could turn now to Column 4 of**
3 **Lisogurski, at the top -- let me know when you're there.**
4 **Line 6 is the first full paragraph.**
5 A. Column 4, starting at Line 6?
6 **Q. Yeah. Column 4, Line 6.**
7 A. Uh-huh.
8 **Q. (As read):**
9 **"Lisogurski discloses an oximeter may**
10 **include a light sensor that is placed at**
11 **a site on a patient, typically a**
12 **fingertip, toe, forehead, or earlobe, or**
13 **in the case of a neonate across a foot.**
14 **The oximeter may use a light source to**
15 **pass light through blood profuse tissue**
16 **and photo electrically sense the**
17 **absorption of the light in the tissue."**
18 **Do you see that?**
19 A. Yes.
20 **Q. And so here, Lisogurski is explaining that an**
21 **oximeter passes light through tissue and then senses the**
22 **absorption of the light in the tissue. Correct?**
23 MR. KIM: Objection, form.
24 THE WITNESS: Well, as what you read there, I
25 mean, that is -- with that -- at that place, what

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1 Lisogurski is describing in that Column 4 from Line 6
2 through 8.
3 BY MR. CHRISTOPHER:
4 **Q. And another way that an oximeter could estimate**
5 **oxygen saturation is by measuring light that is reflected**
6 **from the tissue, as opposed to passing through the**
7 **tissue. Correct?**
8 **I'm sorry. Are you looking at your**
9 **declarations?**
10 A. I'm looking in my -- in my prior declarations,
11 I believe I described both the reflection mode and
12 transmission mode of pulse oximetry. And in -- both
13 involving the absorption of light. One is just looking
14 at the absorption after it passes -- the light further
15 passes through, versus light that comes back on the same
16 side.
17 **Q. Got it. So what we were just looking at in**
18 **Column 4, starting at Line 6 of Lisogurski, that's a**
19 **transmission mode. Correct?**
20 A. And as I described, I believe in the prior
21 declarations as well, that the principles are -- for
22 transmission mode and reflection mode are -- are the
23 same.
24 **Q. Does Lisogurski disclose using the reflection**
25 **mode?**

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1 A. So as I describe in Paragraph 79, a person of
2 ordinary skill in the art would have understood that
3 Lisogurski's configuration is consistent with common
4 pulse oximetry systems, widely adopted.
5 A person of ordinary skill in the art would
6 have been familiar with the well-established physical
7 principles underlying pulse oximetry. That is both
8 changes in absorption and reflection of selective
9 wavelengths, are related to and can be used to determine
10 physiological parameters, like oxygen saturation levels
11 in arterial blood.
12 So a POSITA, certainly reading Lisogurski,
13 would already understand, be familiar with both
14 transmission mode and reflection mode.
15 **Q. You mentioned Paragraph 79. Which declaration**
16 **are you looking at?**
17 A. That was my -- my '533.
18 **Q. Okay. And I -- my question was slightly**
19 **different, which was: Does Lisogurski expressly disclose**
20 **using the reflection mode?**
21 A. Well, first of all, as I described, a POSITA
22 reading Lisogurski would be familiar with both
23 transmission mode and -- and reflectance mode. And then
24 furthermore, for example, in Column 11 of Lisogurski,
25 starting at Line 9 (as read):

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1 "In some embodiments, detector 140 may
2 be configured to detect intensity of
3 light of the Red and IR wavelengths. In
4 some embodiments, an array of sensors may
5 be used. Each sensor in the array may be
6 configured to detect an intensity of a
7 single wavelength. In operation, light
8 may enter detector 140 after passing
9 through the subject's tissue. Detector
10 [sic] may convert the intensity of the
11 received light and electrical signal.
12 The light intensity may be directly
13 related to the absorbance and/or
14 reflectance of the light in the tissue.
15 That is, when more light at a certain
16 wavelength is absorbed or reflected, less
17 light of that wavelength is received from
18 the from the tissue by the detector."
19 So certainly, a POSITA reading Lisogurski, as
20 I've described in -- in, you know, quite clearly there as
21 well, so talking about both the absorption and the
22 reflectance of -- of light and how those signals
23 correspond to the absorption of the constituents of blood
24 at those wavelengths.
25 **Q. So in your view, the passage you just read from**

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1 **Lisogurski discloses reflectance mode to a person of**
2 **skill in the art. Is that correct?**
3 A. Well, even furthermore, for example, going
4 to -- reflection mode is -- is discussed quite
5 extensively, as it turns out. Column 19, for example, at
6 around Line 43 of Lisogurski (as read):
7 "The received light signal may, in
8 part, include light from the first
9 photonic signal. For example, the system
10 may emit light that is reflected by the
11 subject or transmitted through the
12 subject. The interaction of the omitted
13 light with the subject may cause the
14 light to be attenuated."
15 So Lisogurski talks about both reflection and
16 absorption. And, again, as I describe in my declaration,
17 POSITA would be very familiar with -- with both.
18 **Q. Got it. So in the case of the transmissive**
19 **mode, the light is directed onto the patient's tissue.**
20 **Correct -- subject -- let's say subject -- subject's**
21 **tissue. Correct?**
22 A. So the light is transmitted into the body.
23 **Q. And when light is incident on the subject's**
24 **tissue, isn't it true that some of that light would be**
25 **reflected off of the subject's tissue?**

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1 MR. KIM: Objection, form.
2 BY MR. CHRISTOPHER:
3 **Q. Sorry. You were reviewing your declaration?**
4 A. I'm looking at my -- my declaration where I
5 describe the principles of operation. For example, I'm
6 just looking back at prior declaration of the -- the
7 '533. But I'm just referencing, in Paragraph 136,
8 Lisogurski (as read):
9 "Lisogurski sensor includes one or
10 more detectors for detecting light that
11 is reflected by or has traveled through
12 the subjective tissue."
13 So light goes into the tissue, some of it's
14 absorbed, some of it passes through, some of it is
15 reflected, as is described in my declaration and in
16 Lisogurski.
17 **Q. And when you say some of the light that passes**
18 **through is reflected, are you talking about internal**
19 **reflection within the tissue?**
20 A. I'm sorry. The -- I'm not clear what the
21 question is.
22 **Q. Yeah. You mentioned -- when we talked about**
23 **transmissive mode, right, the light passes through the**
24 **tissue and -- and we're measuring the light on the other**
25 **side and we're determining how much was absorbed. Right?**

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1 A. So as I've described, in pulse oximetry, light
2 goes into the body, light comes out of the body. Light
3 is absorbed and light comes out. So light that's not
4 absorbed comes out. It comes out if there is a pathway
5 on the -- on the opposite side, if you will, and also on
6 the same side. And that's true with both of the
7 wavelengths that are used.
8 And so what is explored in pulse oximetry is
9 the relative reflection or transmission, and it's -- it's
10 just the light that's not absorbed. And then
11 ascertaining the relative ratio of what is absorbed by
12 looking at either of the reflected signals or the
13 transmissive signals, as is what a POSITA would
14 understand, as I describe in my declaration, a POSITA
15 reading Lisogurski, and is also what's described in those
16 various sections that we read in Lisogurski just
17 previously.
18 **Q. Understood. And I appreciate the explanation.**
19 **My question is more about, when you're in the**
20 **transmissive mode and you put the light incident on the**
21 **surface of the subject's skin, wouldn't some of that**
22 **light be reflected off the subject's skin?**
23 MR. KIM: Objection, form and scope.
24 THE WITNESS: Light, when interacting with
25 tissue, will either be transmitted, reflected, or

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1 absorbed.
2 BY MR. CHRISTOPHER:
3 **Q. So one option is, when we have light incident**
4 **on -- on tissue, is that it's reflected. True?**
5 A. It does all three things, in general.
6 **Q. Okay.**
7 A. And it's wavelength dependent, as I described.
8 And in a POS- -- POSITA reading Lisogurski would
9 understand what is taught is a pulse oximeter that can be
10 operating in transmissive mode or reflection mode.
11 **Q. Got it. If you can turn back to Column 4 of**
12 **Lisogurski, I'll direct your -- starting around Line 45.**
13 **I'll give you a moment to scroll back. It's Page 34 of**
14 **the PDF.**
15 A. Column 4. What line, please?
16 **Q. Forty-five, please.**
17 A. Forty-five?
18 **Q. Forty-five.**
19 A. Yep.
20 **Q. Great. And I'll -- I'll direct your attention**
21 **to the sentence that reads (as read):**
22 **"Red and infrared IR wavelengths may**
23 **be used because it has been observed that**
24 **highly oxygenated blood will absorb**
25 **relatively less red light and more IR**

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1 **light than blood with a lower oxygen**
2 **saturation."**
3 **Do you see that?**
4 A. Yes.
5 **Q. Okay. And so that's a -- the fact that**
6 **oxygenated blood will absorb less red light and more IR**
7 **light, that's a known characteristic of hemoglobin.**
8 **Correct?**
9 A. What is stated there, you know, certainly, you
10 know, there's variable absorption of different
11 wavelengths in the constituents of blood, including
12 hemoglobin.
13 **Q. And -- and then in the next sentence, it reads**
14 **(as read):**
15 **"By comparing the intensities of two**
16 **wavelengths at different points in the**
17 **pulse cycle, it is possible to estimate**
18 **the blood oxygen saturation of hemoglobin**
19 **in arterial blood."**
20 **Do you see that?**
21 A. Yes.
22 **Q. Okay. And in order to estimate the blood**
23 **oxygen saturation of hemoglobin, a person of skill in the**
24 **art would understand that it's not necessary to determine**
25 **whether or not hemoglobin is present as a threshold**

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1 **determination. Correct?**
2 MR. KIM: Objection, form.
3 THE WITNESS: Can you repeat the question?
4 BY MR. CHRISTOPHER:
5 **Q. Yeah.**
6 **So in order to estimate the blood oxygen**
7 **saturation of hemoglobin in blood, a person of skill in**
8 **the art would understand that you don't need to identify**
9 **whether hemoglobin is present in the blood as a threshold**
10 **issue before making that estimation. Correct?**
11 MR. KIM: Objection, form.
12 THE WITNESS: Well, a POSITA would understand
13 that you have to have your signal be detecting the --
14 the -- detecting the signal that no blood -- that there's
15 nothing there that is responding to the light that you're
16 using. I'm confused a little bit by the -- the question.
17 BY MR. CHRISTOPHER:
18 **Q. When you estimate the blood oxygen saturation**
19 **of hemoglobin, there's an assumption that there is, in**
20 **fact, hemoglobin in the blood that you're measuring.**
21 **Correct?**
22 MR. KIM: Objection, form.
23 THE WITNESS: Well, for hemoglobin, for
24 example, you're -- you're using wavelengths to
25 preferentially detect the -- the signal from oxygenated

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1 and deoxygenated blood. That's why you pick certain
2 wavelengths so you're detecting the presence of -- of the
3 constituent and then determining the relative ratio of
4 the constituent.
5 BY MR. CHRISTOPHER:
6 **Q. Right. And in pulse oximetry, you don't need**
7 **to ask as a threshold matter whether there is hemoglobin**
8 **in the blood that you're measuring. Correct?**
9 MR. KIM: Objection, form.
10 THE WITNESS: Well, you're detecting that
11 there's hemoglobin there. Otherwise, you're not
12 measuring the detected hemoglobin, so you're detecting
13 that the signal that you're getting from the preferential
14 wavelengths that you've used that are sensitive to
15 hemoglobin, so you're -- if you were measuring it on
16 somebody that was dead and had no oxygen, you would not
17 be detecting hemoglobin.
18 BY MR. CHRISTOPHER:
19 **Q. I think I understand. So in pulse oximetry,**
20 **you're measuring the absorption of hemoglobin in the**
21 **blood to be able to estimate the oxygen saturation. Is**
22 **that right?**
23 MR. KIM: Objection, form.
24 THE WITNESS: Well, your -- your measurement is
25 the detection that there's a signal that there's -- the

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1 constituent's there. For example, as -- as also
2 described in Lisogurski, you detect that -- for example,
3 if in the situation where the device is not on, you
4 detect that it's not on by the fact that you're not
5 detecting the hemoglobin and the signal that you're
6 looking for, so it's -- you have to detect to measure.
7 BY MR. CHRISTOPHER:
8 **Q. So you mentioned a situation when a device is**
9 **not on. Is that called a probe-off signal in Lisogurski?**
10 A. So, for example, Lisogurski, Line 36, at the
11 bottom -- or Column 36, starting at Line 66 (as read):
12 "In some embodiments, the system may
13 detect a signal indicative of a system
14 error, such as a physiological impossible
15 value, a probe-off signal" --
16 So a physiological impossible value, meaning
17 detected that it's not there. So I'm detecting the
18 abs- -- I'm detecting the absence of the signal to
19 indicate that the probe is off. Conversely, to detect
20 that the signal is there to measure the hemoglobin.
21 **Q. You mentioned you're detecting the absence of a**
22 **signal to indicate the probe is off. Which signal are**
23 **you referring to?**
24 A. Well, before it was described there, for
25 example, in that Line -- Column 16 -- sorry, Column 36,

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1 Line 66 (as read):
2 "In some embodiments, the system may
3 detect a signal indicative of a system
4 error, such as a physiologically
5 impossible value or a probe-off signal."
6 So a physiologically impossible value indicates
7 a probe-off that's indicative of the signal not being
8 detected that we're looking for, the reflective light and
9 absorbed light used to calculate physiologically relevant
10 ranges. And so it's not being detected. That's one way
11 of indicating that the probe is off.
12 **Q. In that passage of Lisogurski you were just**
13 **reading from, physiologically impossible value and a**
14 **probe-off signal, those are described as two different**
15 **signals. Correct?**
16 MR. KIM: Objection, form.
17 THE WITNESS: Well, I hadn't opined in
18 isolation thinking whether those are separate signals,
19 but a -- a POSITA reading that would understand a
20 physiologically impossible value is also a indication of
21 a probe-off -- indicating a probe-off situation. You can
22 use probe-off signal or other suitable signals or any
23 combination thereof.
24 BY MR. CHRISTOPHER:
25 **Q. Well, you would, at least, agree that in that**

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1 **sentence you're reading from in Lisogurski, they are**
2 **separately listed, the physiologically impossible value**
3 **and a probe-off signal?**
4 **Would you agree with that?**
5 MR. KIM: Objection, form.
6 THE WITNESS: Well, as I describe in the prior
7 declaration of the '488 at Paragraph 221, you know,
8 Lisogurski teaches a sensor can detect when it has fallen
9 off. In Column 36, Line 66, through Column 372:2, the
10 system may detect a signal indicative of a system error,
11 such as a probe-off signal. Lisogurski sensor can
12 identify when an object is in range of the sensor. The
13 wearable device is at least, in part, configured to
14 identify an object.
15 BY MR. CHRISTOPHER:
16 **Q. My question was just about the sentence in**
17 **Lisogurski, not your declaration. Just -- in that**
18 **sentence, they're listed as two separate signals, the**
19 **physiologically impossible value and a probe-off signal.**
20 **Right?**
21 **Sorry. Are you looking at your declaration?**
22 A. I'm reading the Lisogurski around those lines
23 to make sure of them.
24 **Q. Sure.**
25 A. Putting it in context correctly.

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1 Well, I mean, sitting here today reading this,
2 as I stated in the other declaration, a POSITA reading
3 that and in the context would understand that a
4 physiological impossible value is one example of a
5 probe-off signal, meaning that it's -- there's something
6 wrong with the system, an alternative probe-off signal,
7 or any other suitable signal or a combination thereof.
8 So a probe-off signal -- physiologically
9 impossible value is also a probe-off signal, or other
10 sensors could be used, as well, to have a secondary or
11 alternative way of doing a probe-off signal. But
12 certainly POSITA reading that would understand that the
13 physiological impossible value is a detection that we're
14 not getting the hemoglobin and could be used as the
15 probe-off signal.
16 **Q. Well, a POSITA would understand that you could**
17 **have a physically [sic] impossible value even if the**
18 **probe is actually being worn. Correct?**
19 MR. KIM: Objection, form.
20 THE WITNESS: Well, what's described here is
21 that the physiological -- and physiological impossible
22 signal can be used as one way in -- by itself or in
23 combination with other signals to indicate a system
24 error, including the device not being worn correctly.
25 ///

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1 BY MR. CHRISTOPHER:
2 **Q. So there would be system errors other than the**
3 **device not being worn correctly. Is that correct?**
4 A. Well, as I've just described, there are
5 multiple ways where a system error could occur, and
6 certainly probe-off is one of those, and a
7 non-physiological value detecting the presence of
8 hemoglobin would be one such way to indicate that the
9 hemoglobin is not there and whether it be probe-off or
10 light off, but you're detecting the hemoglobin in that
11 use of the physiologically impossible or not detecting it
12 in the case of the physiological impossible value.
13 **Q. So the answer is yes, there are system errors**
14 **other than a probe-off. Correct?**
15 MR. KIM: Objection, form.
16 THE WITNESS: As I said, indeed, other errors
17 could occur, but certainly a POSITA reading Lisogurski
18 would understand that the hemoglobin is being detected
19 and if it's not being detected, that is an indication
20 that probe is off or something other -- something else
21 could be happening.
22 BY MR. CHRISTOPHER:
23 **Q. Okay. We've been going a little over an hour.**
24 **Why don't we take a short break and go off the record.**
25 (Recess.)

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1 MR. CHRISTOPHER: Back on the record.
2 BY MR. CHRISTOPHER:
3 **Q. All right. Welcome back, Dr. Anthony.**
4 **Did you discuss the substance of your testimony**
5 **with anyone during our break?**
6 A. No.
7 **Q. Okay. All right. I'd like to spend some time**
8 **discussing some of Lisogurski figures, make sure we're on**
9 **the same page with some of the terminology.**
10 **Can you turn to Figure 1 of Lisogurski? You**
11 **may want to rotate your page.**
12 A. Yep.
13 **Q. When you're there. Okay. Figure 1 -- I'm**
14 **sorry, did you --**
15 A. I'm also going to bring up the -- my paper
16 version.
17 **Q. Okay. So Figure 1 is a block diagram for a**
18 **System 100. Correct?**
19 A. Correct.
20 **Q. And on the left-hand side Reference Number 102**
21 **represents a sensor. Correct?**
22 A. A sensor 102 as stated in Column 10, Line 45.
23 **Q. Correct. And in Figure 1, sensor 102 includes**
24 **a light source 130 and a detector 140. Correct?**
25 A. That is correct.

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1 **Q. Okay.**
2 A. And as I describe in my declaration, Lisogurski
3 teaches that these components can be arranged in a number
4 of different ways, but in this state here, that's how
5 it's described.
6 **Q. Right. And I'm just asking about Figure 1 for**
7 **now. We'll talk about some of those other issues later.**
8 **And then in Figure 1 on the right-hand side, Reference**
9 **Number 104 refers to a monitor. Correct?**
10 A. Monitor 104.
11 **Q. And the monitor 104 in Figure 1 is**
12 **communicatively coupled to the sensor 102. Correct?**
13 A. You said 104?
14 **Q. Yes. Monitor 104 is communicatively coupled to**
15 **the sensor 102. Correct?**
16 A. 104 is a box that is connected to Box 102, and
17 as I describe in my declaration, you know, Lisogurski
18 teaches that these things can be arranged in a number of
19 different ways, but as drawn here, that's what the figure
20 shows.
21 **Q. Sure. And one of the components inside**
22 **monitor 104 is light drive circuitry 120.**
23 **Do you see that?**
24 A. Yes.
25 **Q. And in Figure 1, there's a line drawn between**

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1 **the box light drive circuitry 120 going to the light**
2 **source 130.**
3 **Do you see that?**
4 A. Yes.
5 **Q. Okay. And that line would represent to a**
6 **person with skill in the art that in Figure 1, light**
7 **drive circuitry 120 is communicatively coupled to the**
8 **light source 139. Correct?**
9 A. There's a connection there between 130 and 120.
10 **Q. Right. And what would a person of skill in the**
11 **art understand the function of the light drive**
12 **circuitry 120 to be?**
13 A. Well, I describe quite ostensibly in my
14 declaration that at least the '533, for example, starting
15 at Paragraph 92 and going through 93, 94, and 95, you
16 know, in 95, you know, describing the -- what a POSITA
17 would have been motivated to do; combine the
18 functionality, for example, of the light control
19 circuitry 110 and light drive circuitry 120 within the
20 light source 120 to control circuitry 110 and light drive
21 circuitry 120 are coupled and work in tandem with the
22 light source and the control circuitry 110, sends timing
23 control signals to the direct -- the light drive
24 circuitry 120 to generate a light drive signal. The
25 signal is the electric current provided to the light

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1 source 130 to, for example, turn the light source on and
2 off and to regulate their brightness.
3 **Q. So the light drive circuitry 120 provides an**
4 **electric current to the light source 130. Is that right?**
5 MR. KIM: Objection, form.
6 THE WITNESS: Well, as described in Lisogurski,
7 as I quote in the same paragraph (as read):
8 "For example the light drive circuit
9 120 may generate a light drive signal
10 which may be used to turn on and off the
11 light source, based on timing control
12 signals."
13 BY MR. CHRISTOPHER:
14 **Q. Got it. And then in Figure 1, within**
15 **monitor 104, there is a front end processing**
16 **circuitry 150.**
17 **Do you see that?**
18 A. Yes.
19 **Q. Now, one of the components inside the front end**
20 **processing circuitry 150 is a dark subtracter 162.**
21 **Do you see that?**
22 A. Yes.
23 **Q. And the front end processing circuitry 150 is**
24 **communicatively coupled to the detector 140 within the**
25 **sensor 102, as shown in Figure 1. Correct?**

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1 A. Well, it's communicatively coupled to
2 everything. Right? Because it's coupled to the
3 detector 140, it's also connected to the 130 through --
4 up through 110 and 120. So there are multiple
5 connections with everything, which sort of further
6 supports what Lisogurski teaches, which is all these
7 things can be rearranged into single devices or split
8 into multiple, depending on design considerations.
9 **Q. Right. One -- one of the components that the**
10 **front end processing circuitry 150 is connected to is the**
11 **back end processing circuitry 170. Correct?**
12 A. Mike, your connection dropped for a second.
13 Can you repeat the question?
14 **Q. Yeah, sure.**
15 **So one -- one of the components that is**
16 **connected to the front end processing circuitry 150 is**
17 **the back end processing circuitry 170. Correct?**
18 A. Correct. As shown in that figure.
19 **Q. Okay. And as shown in Figure 1, the back end**
20 **processing circuitry 170 includes a processor 172 and a**
21 **memory 174. Correct?**
22 A. There is processor memory shown there, right.
23 And also, there would be processing and memory in the
24 front end circuitry as well, because there's digital
25 conditioning, which requires some type of processor and

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1 also, some type of memory.
2 **Q. Okay. Well, you agree that at least in**
3 **Figure 1, it doesn't show a processor and memory inside**
4 **of the front end processing circuitry 150 as it does the**
5 **back end processing circuitry 170. Correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, a POSITA reading Lisogurski
8 would understand, first of all, that all the various
9 components can be assembled in different ways. So even
10 just taking that, a POSITA would know that they could
11 have that figure that's in 170, or that subfigure, and
12 put some of the processor where it's labeled.
13 And there is processing in 150, but quite
14 clearly, you can take that processing and put it
15 elsewhere, as with memory. But indeed, even independent
16 of -- of that, the digital conditioner, the -- the
17 digital converting, there's memory in processing that has
18 to be in the 150 as well in order to accomplish those.
19 BY MR. CHRISTOPHER:
20 **Q. I totally understand, but that wasn't my**
21 **question.**
22 **My question is just simply: As we see**
23 **Figure 1, as it's -- as it's written, there's no**
24 **processor or memory shown inside of Figure 1.**
25 **You agree with that?**

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1 MR. KIM: Objection, form.
2 THE WITNESS: There is processor and memory
3 implied. A POSITA reading this, in both the figure and
4 the declaration, understands that when there's digital
5 functionality, there has to be a processor to accomplish
6 that digital functionality. It has to be memory. And
7 then furthermore, POSITA teaches -- sorry -- Lisogurski
8 teaches that the components can be rearranged.
9 And so in some sense, it's a -- a
10 representation of one possible consideration, but not at
11 all the -- the only way that Lisogurski opines that such
12 a device can be realized.
13 BY MR. CHRISTOPHER:
14 **Q. Not my -- not my question. Just the word**
15 **"processor," you don't see that anywhere inside Box 150.**
16 **Correct?**
17 A. Well, for example, when the digital conditioner
18 is described, that is in the box of 150; 158, the digital
19 conditioner is described, for example, in Column 13 of
20 Lisogurski, I rely on Line 46 (as read):
21 "Digital conditioner 140" -- I'm
22 sorry -- "digital conditioner 158 may
23 perform any suitable digital conditioning
24 of the detector signal. The digital
25 conditioner, may include types of digital

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1 filtering of the signal (e.g., low pass,
2 high pass, band pass, notch, or any other
3 suitable filtering), amplifying,
4 performing an operation on the signal,
5 performing any other suitable digital
6 conditioning."
7 So any of that functionality has to have a
8 processor and has to have memory. And that is -- would
9 be, certainly, part of the block that is labeled 150.
10 MR. CHRISTOPHER: I'm going to move to strike
11 as nonresponsive.
12 BY MR. CHRISTOPHER:
13 **Q. I -- I'm just asking you: In Figure 1, within**
14 **Box 150, you don't see the word "processor" in there, do**
15 **you?**
16 A. Well, in Box 150, it's described as front end
17 processing. So processing happens on a processor. The
18 word "processor" is not drawn in that box, but it
19 certainly -- a POSITA reading that understands there's a
20 processor and memory there to accomplish processing.
21 **Q. And the word "memory" doesn't appear in**
22 **Box 150. Correct?**
23 A. As I've described, a POSITA reading this, and
24 as described in the -- it's a front end processing
25 circuitry. Processing requires a processor and requires

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1 memory, and doesn't -- all the individual -- "processor"
2 is not, as a word, stated in that box, but a POSITA,
3 understanding what that box is, knows that there's memory
4 there and knows that there's processing there.
5 And, furthermore, Lisogurski teaches that the
6 components, as they're arranged there, can be rearranged
7 in any number of ways, into a single device or multiple.
8 **Q. And "memory" is also not a word stated in**
9 **Box 150. Correct?**
10 A. You can't --
11 MR. KIM: Objection, form.
12 I'm sorry.
13 THE WITNESS: "Memory" is not a -- written as a
14 word there. Processing requires memory. Processing
15 requires a processor. So absolutely, there's memory and
16 processing in that functional block, even if the word is
17 not explicitly written there.
18 BY MR. CHRISTOPHER:
19 **Q. Okay. So we agree it's not explicitly written**
20 **there. "Memory" is not explicitly written in 150.**
21 **Correct?**
22 A. As I've said, Lisogurski explicitly teaches
23 that things can be rearranged. That figure is a
24 representation of the functionality, but a POSITA looking
25 at that the figure would explicitly know -- it's not

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1 explicitly written, but they know, to accomplish front
2 end processing, there has to be memory, there has to be
3 processing power.
4 And as described there what the digital
5 conditioner does, is processing a signal. You can't do
6 that without memory, without a processor. So I agree
7 that in that figure, it's not -- the word "processor" is
8 only showing up in 172, but "processing" shows up in the
9 box at 150. Processing requires that functionality of
10 memory and processor.
11 **Q. Okay. And in Figure 1, just as it's shown in**
12 **Figure 1, you would agree that a majority of the**
13 **components within system 100 are in the monitor 104.**
14 **Correct?**
15 MR. KIM: Objection, form.
16 THE WITNESS: Well, as I described there,
17 there's what is -- there's the figure as a
18 representation, and then quite clearly, as I state in
19 Paragraph 93 of my '533 declaration, a person of ordinary
20 skill in the art would have understood that this
21 disclosure of Lisogurski, that the functionality of some
22 of the components may be combined into a single
23 component, can be integrated into a combined unit.
24 Lisogurski further discloses the functionality
25 of some of the components of monitor 104 can be divided

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1 over multiple components.
2 So there's, again, what is shown in the figure
3 and then with what Lisogurski teaches, and a POSITA would
4 understand, is that functionality can be moved around, as
5 I further described in the -- what a person of ordinary
6 skill in the art would have been motivated to do in some
7 of those motivations in the subsequent paragraphs.
8 MR. CHRISTOPHER: Okay. I'm going to move to
9 strike as nonresponsive.
10 BY MR. CHRISTOPHER:
11 **Q. In Figure 1, how many --**
12 MR. KIM: I disagree.
13 MR. CHRISTOPHER: Okay.
14 MR. KIM: But you can go on.
15 BY MR. CHRISTOPHER:
16 **Q. Dr. Anthony, in Figure 1, how many boxes are**
17 **inside monitor 104?**
18 A. There is -- one, two, three, four -- six of
19 the -- I'll call them the bigger boxes. And then there's
20 -- one, two, three, four, five, six, seven, eight, nine,
21 ten, 11, 12, 13, 14, 15, 16, 17 -- 18 boxes, as drawn in
22 that representative figure.
23 But a POSITA, as I've explained, reading
24 Lisogurski, understands that that functionality can be
25 moved, as I describe in my subsequent paragraphs on the

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1 motivation that a POSITA would have had to modify, and is
2 taught by Lisogurski that even though they're showing a
3 particular set of boxes, a POSITA could choose a
4 different set of boxes to group the components.
5 **Q. Did I ask about any modifications to Figure 1**
6 **in my question?**
7 MR. KIM: Objection, form.
8 THE WITNESS: You asked me to count boxes, I
9 did. And I further expanded how I -- and my opinions
10 around box -- or Figure 1 in referencing it in how I
11 describe it in my declaration.
12 BY MR. CHRISTOPHER:
13 **Q. Right. I just asked how many boxes, not what**
14 **your declaration says.**
15 **And then in Figure 102, there's two boxes. Can**
16 **we, at least, agree on that, in Figure 1?**
17 A. In that figure, which is representative of the
18 teachings of Lisogurski, there are two boxes. But as I
19 further opine in my declaration, a POSITA would be
20 motivated, for example, to move Box 120 and 110 up into
21 the -- what is the 102 box, for example, amongst other
22 motivations to combine.
23 **Q. All right. Let's turn to Figure 3 of**
24 **Lisogurski. Let me know when you're there. Two pages**
25 **down.**

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1 A. Yep. I'm just pulling up my declaration and
2 the -- the patent.
3 **Q. So you said, "The patent"? Which patent?**
4 A. The Lisogurski patent.
5 **Q. Got you. Okay.**
6 A. Okay.
7 **Q. And in Figure 3, you see Reference Number 312?**
8 A. Yes.
9 **Q. And that's pointing to a sensor. Correct?**
10 A. Yes.
11 **Q. And that would correspond to the sensor 102 in**
12 **Figure 1 in the block diagram. Correct?**
13 **Sorry. Are you reading your declaration?**
14 A. I'm just making sure that I'm referring to
15 sensor unit 312 correctly in my declaration. So it's
16 described -- you know, the sensor unit that is described
17 in Figure 3 is the sensors -- or sensor unit in this
18 particular embodiment that's highlighted in Figure 3.
19 **Q. Well, and so it's -- it's a particular**
20 **embodiment, for example, of the sensor 102 that we had**
21 **looked at in Figure 1 of Lisogurski. Correct?**
22 A. Correct. And also highlighting, for example,
23 that you if you look at how -- Figure 102 there's a
24 singular light source and a singular detector labeled
25 there as a box, but in -- as Figure 3 is described as an

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1 embodiment, sensor unit 312 may be part of an oximeter.
2 312 may include one or more light sources, so that sensor
3 unit could include more light sources, even though that's
4 not shown as 10 -- what is in 102.
5 **Q. Understood.**
6 **And likewise, Reference Number 314 in Figure 3,**
7 **that's -- that's an example of how you could implement**
8 **the monitor 104 from Figure 1. Correct?**
9 **Sorry. Again, to -- not to interrupt you, are**
10 **you looking at your declaration? Since we're not in**
11 **person, I can't see what you're looking at.**
12 A. And the -- the Lisogurski patent and my
13 declaration.
14 So as -- you know, so 314 and some embodiments,
15 for example, the Paragraph -- Column 18 and some
16 embodiments monitor the 314, maybe implemented as
17 monitor 104 in Figure 1.
18 **Q. And the sensor unit 312 in Figure 3, that could**
19 **be, for example, placed on a subject's finger to take**
20 **measurements. Correct?**
21 A. Well, it's the sensor unit that would come in
22 contact with the person's body.
23 **Q. Sure. It would come into contact with some**
24 **portion of the person's body to take a measurement.**
25 **Right?**

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1 A. Yes.
2 **Q. Okay. And would you agree that the sensor unit**
3 **312 needs to be designed in such a way that it can be**
4 **placed on at least some portion of the subject's body to**
5 **take measurements?**
6 A. So to come in contact with the body, you need
7 to design it so it can contact the body, yes.
8 **Q. Got it.**
9 **And would you agree that if one were to add**
10 **components to the sensor unit 312, that could potentially**
11 **increase the size of the sensor unit 312?**
12 MR. KIM: Objection, form.
13 THE WITNESS: Well, for example, you know, a
14 POSITA would understand, as I described in Paragraph 85
15 of my '533, the bottom of Page 36, a person of ordinary
16 skill in the art would have recognized Lisogurski's
17 disclosure of combining and dividing functionality among
18 electronic components, such as control, front-end
19 processing. Back-end processing was common practice
20 based on design engineering considerations, such as power
21 management, miniaturization, reliability, and
22 manufacturability, and then I would also refer back to my
23 prior declaration on the '533 where I talk about industry
24 trends, for example, in Paragraph 48 in terms of the
25 advances in miniaturization of electronics and in

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1 communications technology. Those trends led to the
2 development of many remote and wearable and miniaturized
3 monitoring systems.
4 So all things being equal, right, you know, you
5 can use miniaturized components to -- to -- and modern
6 electronics to make things small, even when you move
7 functionality around.
8 BY MR. CHRISTOPHER:
9 **Q. Got it.**
10 **But if -- let's just stick with Figure 3 of**
11 **Lisogurski. And all things being equal, you know, absent**
12 **some miniaturization, if I were to take the components**
13 **from the monitor 314 and put them into the sensor**
14 **unit 312 that could potentially increase the physical**
15 **size of the sensor unit 312. Correct?**
16 MR. KIM: Objection, form.
17 THE WITNESS: Well, as I described, you know,
18 this is one embodiment. A POSITA reading Lisogurski and
19 being familiar with the state of the art as a POSITA
20 would be, as I described in my other declarations as
21 well, no. You know, you would move components around and
22 use -- if you wanted it to be small, you'd use smaller
23 components and you'd have the design trade-offs,
24 manufacturing trade-offs to accomplish a miniaturized
25 version even when you added more functionality.

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1 BY MR. CHRISTOPHER:
2 **Q. So a person of skill in the art would know that**
3 **they would have to use smaller components if they were to**
4 **take components from monitor 314 and place them inside**
5 **sensor unit 312. Is that correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, as I described, you know,
8 POSITA, both in the '533 and the prior '533, you know, a
9 POSITA reading Lisogurski and having the knowledge of a
10 POSITA at the time would be familiar with electronics
11 that allow you to have embodiments that are enabled by
12 semiconductor miniaturized components. So it's not about
13 a wholesale, straight-up modification of Figure 3.
14 Figure 3 is one embodiment. POSITA taking the teachings
15 of Lisogurski would understand how to use miniaturized
16 electronics to enable a miniature wearable device.
17 BY MR. CHRISTOPHER:
18 **Q. All right. Let me -- let me see if I**
19 **understand? So a person of skill in the art, if they**
20 **wanted to take components from the monitor 314, they**
21 **could use miniaturized versions of those components and**
22 **position them within the sensor unit 312. Is that right?**
23 A. So a POSITA could choose to move things around
24 without miniaturizing. A POSITA could also choose to
25 move things around while miniaturizing, depending on the

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1 role that the thing -- the device they're trying to
2 accomplish.
3 **Q. So in the context of Lisogurski, if a person of**
4 **skill in the art chose not to miniaturize the components**
5 **of monitor 314 and they were to reposition them inside**
6 **the sensor unit 312, you would agree that that would**
7 **increase the physical size of the sensor unit 312.**
8 **Correct? Again, assuming they haven't miniaturized**
9 **anything.**
10 MR. KIM: Objection, form.
11 THE WITNESS: Well, even a hypothetical
12 arrangement of just moving things around, POSITA would
13 also need to consider not just moving components but the
14 manufacturability and the cost. It's not just, hey, I'm
15 going to move these things. There's other design
16 constraints. And so with other design constraints,
17 manufacturing constraints, even if you were to take
18 the -- what you're opining about here, which is not what
19 I was opining about -- just taking Figure 3 and moving it
20 around, POSITA could choose to do that. It's what's
21 taught in Lisogurski. It could be smaller. It could be
22 the same size. It depends on other design factors. But
23 certainly as I opine and describe in the declarations,
24 POSITA would be very familiar with the ability to
25 miniaturize in order to -- and be motivated to do so

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1 because of trends and -- and wearable fitness technology
2 and miniaturization of electronics and desire for health
3 and -- and fitness devices.
4 BY MR. CHRISTOPHER:
5 **Q. Would it be fair, then, to say that there are**
6 **trade-offs associated with repositioning the components**
7 **within Lisogurski's system, for example, into the sensor**
8 **unit 312?**
9 A. There are positive benefits and potentially
10 negative benefits -- or negative impli- -- there are
11 design trade-offs. And a POSITA would know how to weigh
12 those off and the benefit of being able to miniaturize
13 and put things in a sensor there to make it wearable and
14 low cost, that's -- that's a very significant positive,
15 even if it may increase a little bit of the complexity of
16 the manufacturing. But the complexity of the
17 manufacturing is mitigated by the fact, as I describe in
18 the prior declaration, of the trends of miniaturized
19 electronics. So even there, it's -- in volume, it's a
20 net positive. So there may be, in a particular design
21 goal, some negatives, but in general, it's going to be a
22 positive to move the things around as I've opined that a
23 POSITA would do at the time.
24 **Q. You mentioned that the complexities of**
25 **manufacturing as a -- as a potential negative.**

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1 **Are there any other potential negatives that a**
2 **person of skill in the art would recognize as being**
3 **associated with one of these modifications?**
4 A. First of all, I want to clarify. The
5 manufacturability was not necessarily a negative. It's
6 I'm relying on -- it may be a little bit more -- it would
7 change. You know, you'd have to use semiconductor
8 technology. So it's not a negative. It's a -- it's
9 different, and you would outweigh-- you would weigh those
10 trade-offs. So a POSITA in designing a device would look
11 at the design space and design accordingly for the thing
12 that they were trying to achieve, both on the cost, the
13 performance they're trying to achieve, the manufacturing
14 ability, and certainly a POSITA reading Lisogurski and
15 being familiar with the art would be very motivated and
16 not at all be demotivated to combine things in the way
17 that I have described that they would.
18 **Q. So a moment ago you mentioned positive benefits**
19 **and potentially negative benefits, and I'm wondering what**
20 **are the potentially negative benefits?**
21 A. What I meant there is not negative benefits,
22 but it's sort of design trade-offs. Some things are more
23 positive. Some things make -- the design, you need to
24 take a little bit more time to do the design, but there
25 are design trade-offs. The net positive is being able to

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1 take the teachings of Lisogurski and the knowledge of the
2 POSITA at the time with the trend towards miniaturization
3 and realize a functional, wearable wirelessly-enabled
4 system. So it's design trade-offs. Things go up and
5 down, but overall there's net positives when considering
6 those -- those different design trade-offs.
7 **Q. Would one of the design trade-offs be cost?**
8 A. You're trading off cost and complexity. You're
9 trying to achieve a certain product spec -- a price point
10 for a particular market, so a POSITA in realizing a
11 device for a presumptive sale in a commercial space would
12 consider all the trade-offs and design accordingly, and
13 make design decisions accordingly. You know,
14 fortunately, as I described, semiconductor
15 miniaturization technologies were very cost-effective and
16 very easy to manufacture. It would allow a POSITA to
17 move the functionality around as Lisogurski teaches.
18 **Q. Are there any other trade-offs that a person of**
19 **skill in the art would recognize in modifying Lisogurski**
20 **to put some of the components from the monitor inside of**
21 **the sensor?**
22 A. So what I'm trying to clarify is that it's --
23 there are multiple design axes that a POSITA needs to
24 consider when realizing a device. There's the
25 functionality. There's the cost. There's the

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1 manufacturability. There's the target market. And a
2 POSITA, as I've described, in -- with the motivations for
3 a -- of the market would understand to take -- how to
4 take the teachings of Lisogurski and use modern
5 electronics to miniaturize. And it's not a negative.
6 They're -- they're a designed space. And a designed
7 space, net overall, they would come to a design
8 configuration that made sense for the thing that they
9 were trying to accomplish.
10 **Q. Well, understood. And I'm just -- you've**
11 **mentioned trade-offs. And I'm just trying to get a sense**
12 **of kind of the universe of trade-offs that a person of**
13 **skill in the art would be considering with this**
14 **modification.**
15 **Can you describe those?**
16 A. I think I just did. What I was describing is
17 the design space. The act, the various design axes, if
18 you will, of cost and manufacturability, performance,
19 these are all the -- as you're designing some things,
20 say, well, okay, what's the cost of the end point?
21 What's the market? What's the -- the profit I'm trying
22 to make? What are the issues that I have to resolve with
23 manufacturing?
24 So it's not that they're negatives. They're
25 not teaching away from a particular -- it's like these

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1 are the factors -- it's a system you're designing, and
2 you need to consider all the axes of the system. But the
3 fortunate thing is that -- and Lisogurski clearly
4 teaches -- that the components can be moved around in a
5 way, and POSITA being familiar with the trends in
6 miniaturization of technology would know that it's not
7 prohibitively expensive. In fact, it's quite inexpensive
8 to make things miniaturized and benefiting from
9 semiconductor technologies.
10 **Q. Understood. You mentioned cost, you mentioned**
11 **manufacturability, and you mention -- excuse me --**
12 **mentioned performance.**
13 **Are there -- are there any other factors that a**
14 **person of skill in the art would consider?**
15 A. I wasn't opining about all the possible
16 considerations. It wasn't necessary to enumerate the
17 infinite number of considerations, but if a POSITA is
18 going to consider the cost, the quality, the
19 maintainability, the -- the market they're trying to
20 achieve -- but, again, you know, all those things are, as
21 I said, very, you know, with the trends of
22 miniaturization of electronics, quite achievable and be
23 quite straightforward to achieve a commercially viable
24 market -- product or just a product that wasn't
25 commercially viable, but it was demonstrating that it was

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1 miniaturized.
2 **Q. Got it.**
3 **So if we could turn back now to Figure 1 of**
4 **Lisogurski. I would like to ask you about some of the**
5 **functionality of the light source 130. Lisogurski**
6 **teaches that the light source 130 can emit light with a**
7 **red wavelength and an IR wavelength into the subject's**
8 **tissue, for example. Correct?**
9 **And if you're looking for something in**
10 **Lisogurski, I would suggest Column 8, starting at**
11 **Line 48. So perhaps we should go there. Column 8,**
12 **Line 48. Let me know when you're there.**
13 A. Line 8, Column?
14 **Q. Sorry. Column 8, Line 48.**
15 **Wait.**
16 A. -- of Lisogurski.
17 **Q. Hold on. I may be off. A moment.**
18 **Column 10, Line 48.**
19 A. Okay.
20 **Q. All right. As you see in Line 49, Lisogurski**
21 **teaches (as read):**
22 **"Light source 130 may be configured to**
23 **emit photonic signals having one or more**
24 **wavelengths of light (e.g., red and IR),**
25 **into a subject's tissue."**

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1 **Do you see that?**
2 A. Yes.
3 **Q. Okay. And then if we go back to Figure 1, the**
4 **detector 140 will detect the intensity of light at the**
5 **red and IR wavelengths after passing through the**
6 **subject's tissue. Correct?**
7 A. I mean, the light source emits that a
8 wavelength and the detector will -- will detect light
9 that's reflected or transmitted through.
10 **Q. And the detector 140 will convert the intensity**
11 **of the received light into an electrical signal.**
12 **Correct?**
13 A. For you know, then subsequent processing and --
14 yes.
15 **Q. Sure.**
16 **And that's referred to as the detection signal.**
17 **Correct?**
18 A. Well, the detector light falls upon it and
19 generates a voltage that can be, you know, sampled and --
20 **Q. So if you go to Column 11 of Lisogurski,**
21 **Line 20. Let me know when you're there, we'll read it**
22 **together.**
23 A. What column? I'm sorry.
24 **Q. 11. It's Page 38 of your PDF.**
25 A. Column 11, okay.

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1 **Q. Yes. So Column 11, starting around -- not**
2 **around -- at Line 20, Column 11, Line 20, Lisogurski**
3 **states (as read):**
4 **"After converting the received light**
5 **to an electrical signal, detector 140 may**
6 **send the detection signal to**
7 **monitor 104."**
8 **Do you see that?**
9 A. Yes.
10 **Q. So the detection signal is your electrical**
11 **signal generated by the detector 140. Right?**
12 A. That's what's described there in that sentence.
13 **Q. Okay. I'm just trying to get our terminology**
14 **straight.**
15 **Would you agree that one of Lisogurski's goals**
16 **is to improve the signal-to-noise ratio for the detection**
17 **signal?**
18 A. So Lisogurski talks about various ways to
19 improve signal to noise, yes.
20 **Q. And improving the signal-to-noise ratio is a**
21 **benefit. Correct?**
22 A. In general, yes. Yeah.
23 **Q. And Lisogurski -- one of the ways that**
24 **Lisogurski improves the signal-to-noise ratio is by**
25 **subtracting out noise. Correct?**

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1 A. Well, for example, in Column 13 some
2 embodiments Line 60 (as read):
3 "In some embodiments" -- I'm sorry,
4 Line 60 -- "In some embodiments, dark
5 subtractor may subtract dark" -- "dark
6 values from the Red and IR components to
7 generate adjusted Red and IR signals.
8 For example, a dark subtractor 162 may
9 determine a subtraction amount from the
10 dark signal portion of the detection
11 signal and subtract it from the peak
12 portion of the detection signal in order
13 to reduce the effect of the dark signal
14 on the peak."
15 You know, and reduce the effect of the dark
16 signal, you know, to improve signal's noise.
17 **Q. Understood. What -- what would a person of**
18 **skill in the art understand to be the potential sources**
19 **of noise in Lisogurski's system, with respect to the**
20 **detection signal?**
21 MR. KIM: Objection, form.
22 THE WITNESS: Well, for example, as I describe
23 Lisogurski in my '533 decl- -- declaration, at Paragraph
24 90, (as read):
25 "Lisogurski discloses various methods

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for improving signal to noise. For example, Lisogurski discloses modulating the light drive signal to have a period of time, period the same or closely related to the period of the cardiac cycle. Using a dark subtraction process to remove noise from the ambient light, subtracting from the background or dark level from the levels received during on and off. Three varying parameters related to the light drive signal, including drive current or light brightness duty cycle or other suitable parameters."

So being able to deal with the noise, for example, that comes from sensor noise, if you were, sensor offset. When there's no light, there's a bias, it's the dark subtraction. Modifying light parameters to overcome, for example, ambient light, which a POSITA understood as a pervasive need throughout all type of wearable optical devices. And synchronizing to places in the body response, where you get better signal.

BY MR. CHRISTOPHER:

Q. Okay. So you mentioned sensor noise and you mentioned ambient light.

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Are there other potential sources of noise in Lisogurski's system with respect --

MR. KIM: Objection, form.

BY MR. CHRISTOPHER:

Q. -- with respect to the detection signal?

A. Well, for example, as I described at the bottom of Paragraph 95, and motivation to combine functionality of the control circuitry, light drive circuitry, light source, at the end of that Paragraph 95, the limitations in transmitting accurate electrical signals, without introducing noise or timing errors, a person of ordinary skill in the art would have been motivated to address those sources of noise, as well.

Q. Are electrical signals a potential source of noise?

A. Of variation and timing, variation and sort of ground playing. So distances between signals, all those are -- are reasons why a POSITA would be motivated to move things closer to each other.

Q. In Lisogurski, another form of potential noise with respect to the detection signal would be patient motion. Correct?

MR. KIM: Objection, form.

THE WITNESS: Motion artifacts, ambient noise -- ambient light change, a POSITA would be familiar

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with those sources of noise as well.

BY MR. CHRISTOPHER:

Q. Okay. And if we go back to Figure 1 of Lisogurski, would you agree that the front end processing circuitry 150, for example, would be a potential source of noise with respect to the detection signal?

MR. KIM: Objection, form.

THE WITNESS: Well, as you describe in Paragraph 99, you know, a POSITA would have been further motivated to combine the front end processing -- processing circuitry into the same device where the detector is located.

A person of ordinary skill in the art would have been motivated to do so for three reasons. Disclose that the -- Lisogurski discloses its sensor preprocesses a signal before transmitting the process signal to the monitor. Accordingly, a person of ordinary skill in the art would have been motivated to combine the components that perform the same functionality together to substantially minimize latency, improve signal fidelity, i.e., improve noise.

And, overall -- and in overall system architecture by reducing signal travel distances and potential points of interference.

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BY MR. CHRISTOPHER:

Q. I don't think that was my -- my question, though.

My question was: Does the front end processing circuitry in Figure 1 generate noise that impacts the detection signal in the sensor 102?

MR. KIM: Same objection.

THE WITNESS: Well, I mean, as I described, the POSITA, looking at Figure 1 and reading Lisogurski, as I described in Paragraph 99, there's -- a POSITA would be motivated to reduce the opportunity for noise between a separated detector in front end processing circuitry to minimize travel distances, to minimize sort of transmitting analog signals, to reduce timing errors, propagation errors.

So there's a level of noise associated with the -- a presumptive configuration where they're separated. And so a POSITA would be very motivated to move them together in order to minimize that noise.

BY MR. CHRISTOPHER:

Q. So in an embodiment of Lisogurski in which the front end processing circuitry 150 is -- is physically separated in space from the sensor of 102, one source of noise would be along the transmission path between the sensor 102 and the front end processing circuitry. Is

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1 **that right?**
2 A. As I describe in Paragraph 99, that's one
3 potential source. The distance, the propagation timing,
4 whether you're -- how that sort of, at a distance,
5 connection is made. A POSITA would be motivated to bring
6 the functionality together to minimize that propagation
7 distance issues, improve signal to noise.
8 **Q. Now, inside the front end processing**
9 **circuitry 150, you testified earlier that a person of**
10 **skill in the art would understand that there's a**
11 **processor and memory inside the circuitry 150. Is that**
12 **correct?**
13 A. As I described, there would certainly be memory
14 and processing capabilities as part of a front end
15 processing circuitry.
16 **Q. Right. And the components inside of front end**
17 **processing circuitry 150 would communicate with one**
18 **another. Correct?**
19 A. They would be connected, yes, to -- attach
20 their -- have their functionality interconnected.
21 **Q. And so there would be electrical current being**
22 **sent between the various components inside the front end**
23 **processing circuitry 150 in Lisogurski. Correct?**
24 A. I'm sorry. Can you repeat the question?
25 **Q. Yeah, sure.**

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1 **You know, we mentioned, you know, electrical**
2 **current earlier as a potential source of noise.**
3 **And my question is: There is electrical**
4 **current being sent within the front end processing**
5 **circuitry 150 in Lisogurski. Correct?**
6 A. I'm not sure I said electrical current is the
7 source of noise. I said the -- if you're trying to, for
8 example, transmit signals over a long instance, if
9 they're digital, there's timing issues with long
10 distances. If they're analog, there's degradation
11 issues.
12 So it's -- you know, current is not the source
13 of noise. But, you know, you can get noise in your -- in
14 your signals, which are currents and voltages. It's an
15 electrical system.
16 And so as I describe in Paragraph 99, a POSITA
17 would have been motivated to bring things together so you
18 didn't have those sources of -- of potential noise.
19 **Q. And you mentioned just now analog and digital**
20 **communication.**
21 **In Lisogurski, in Figure 1, is the**
22 **communication between the sensor 102 and the**
23 **monitor 104 -- 104 digital or analog?**
24 A. Well, as described in that figure, Figure 1 in
25 Column 13, for example (as read):

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1 "Analog conditioner 152 may perform
2 any suitable analog conditioning of the
3 detector signal. A conditioning
4 performed may include different types of
5 filtering."
6 And then there's analog to digital conversion
7 to get into the digital space. So as I described in my
8 declaration, you know, that -- minimizing the propagation
9 distance of that analog signal would be one motivation to
10 move the front end circuitry closer, and then also,
11 minimizing any kind of timing jitters on the digital
12 circuitry as well.
13 **Q. So in Figure 1 of Lisogurski, the communication**
14 **between the sensor 102 and the monitor 104 would be**
15 **analog. Correct?**
16 A. Well, in -- in -- as depicted in Figure 1,
17 presumptively, it's analog coming out of the detector and
18 going into the analog conditioner. But as I described in
19 my motivations in the modifications, you know, the -- the
20 front end processor being moved up there, that would then
21 immediately, more proximally, be converted to a more
22 co-located digital signal within the integration.
23 **Q. So even if a person of skill in the art were to**
24 **modify Lisogurski to put the front end processing**
25 **circuitry within the sensor 102, they would still have to**

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1 **convert an analog signal from the detector to digital.**
2 **Correct?**
3 A. Wait. A sensor -- a detector is detecting a
4 continuous thing, light, transmitting -- changing photons
5 to electrons. Those electrons are a voltage, a signal,
6 an analog signal. Those are then needing to be sampled.
7 So a POSITA would be motivated to sample that
8 data as soon as possible so that you are not dealing with
9 any kind of analog issues or noise with analog domain and
10 also would be motivated to keep the footprint of the
11 digital processing small so you didn't have timing issues
12 once it's -- it's digital as well.
13 So there's a lot of motivation to co-locate
14 things and miniaturize things in order to minimize both
15 analog noise and digital noise.
16 **Q. Let me just make sure I understand that. So**
17 **even if we were to co-locate the front-end processing**
18 **circuitry with the sensor 102, we still have to perform**
19 **an analog-to-digital conversion from the output of the**
20 **detector. It's just in closer proximity to the detector**
21 **relative to Figure 1. Is that right?**
22 A. And therefore doesn't suffer from analog noise
23 sources, the propagation issues and...
24 **Q. Understood.**
25 **Would you agree that heat is a potential source**

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1 **of noise in Lisogurski's system?**
2 MR. KIM: Objection, form, scope.
3 THE WITNESS: I guess I'm -- I'm not clear what
4 you mean.
5 BY MR. CHRISTOPHER:
6 **Q. Well, we've been talking about the detection**
7 **signal and improving the signal-to-noise ratio. Correct?**
8 A. Yep.
9 **Q. And would a person of skill in the art**
10 **understand that heat would be a source of noise in the**
11 **detection signal?**
12 MR. KIM: Same objection.
13 THE WITNESS: You mean heat from the human
14 body?
15 BY MR. CHRISTOPHER:
16 **Q. Sure. Let's -- let's use that as one example.**
17 **Heat from the human body, would that be a potential**
18 **source of noise in the detection signal?**
19 A. Well, environment matters, but there's not -- I
20 mean, LEDs are -- you know, the human body is a known
21 temperature, plus or minus a little bit. LEDs don't
22 generate a lot of heat. So does varia- -- do thermal
23 variations potentially need to be understood, yes, but
24 it's -- there's no -- POSITA knows how to address -- you
25 know, modern electronics are not generating so much heat

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1 that -- with these types of systems that you'd be
2 negatively impacting the motivation to make the
3 combinations that I'm pointing -- that a POSITA would be
4 motivated to do so.
5 So environmental conditions vary, and that's a
6 source of variation. There are many sources of
7 variation, but heat would not be any bigger of an issue
8 than anything else.
9 **Q. Understood. And I'm not asking about any**
10 **motivations. I'm just asking, you know, as a -- as a**
11 **technical matter, you know, thermal variations are a**
12 **potential source of noise in the detection signal.**
13 **Correct?**
14 MR. KIM: Objection, form and scope.
15 THE WITNESS: Well, I mean, ambient light is
16 radiation. You know, that's -- you know, variation of
17 ambient light is thermal -- is thermal noise. There's
18 radiative heat, there's convective heat, there's
19 conductive heat. Oversimplified thermodynamics. Sources
20 of noise, system -- environmental conditions impact an
21 electronic system, but in this case, there's not -- I
22 haven't opined in my declaration about heat, I don't
23 believe, but there's -- the level of heat here is not
24 such that it would deter a person from making the -- the
25 combinations that I'm opining about.

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1 BY MR. CHRISTOPHER:
2 **Q. You -- you haven't offered any opinions in your**
3 **declarations with respect to heat being a potential**
4 **source of noise in Lisogurski's system?**
5 MR. KIM: Objection, form.
6 THE WITNESS: Well, I'm searching for -- into
7 my declaration that it was not opining about heat. I
8 didn't find it necessary to do so. A POSITA being
9 familiar with modern electronics would not be concerned
10 with any of the impact of the -- of the heat factors
11 associated with arranging the components as I suggested.
12 BY MR. CHRISTOPHER:
13 **Q. Understood.**
14 **So if we go back to Figure 1, you would agree**
15 **that a front end processing circuitry 150 in operation**
16 **would generate heat. Correct?**
17 MR. KIM: Objection, form.
18 THE WITNESS: Operating electronics where there
19 is resistances -- resistances turn current into heat.
20 But modern electronics, they do not generate a lot of
21 heat. That's why they can be miniaturized and that's why
22 they run low -- low power. And so there's heat in the
23 operation of a circuit, but not so much heat that a
24 POSITA would be concerned with the -- the performance or
25 the motivations to combine here. And at the same time,

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1 they would -- if -- if -- they would also know how to
2 deal with any heat issues by adding -- by arranging the
3 structure in a particular way or, you know, making sure
4 that they're using -- if they really want to sort of
5 compact things as much as possible, they would use the
6 appropriate thermal factors of the components they
7 select. So there aren't any heat issues that would lead
8 a person away from the motivations of com- -- of
9 modification that I have opined about in my declaration.
10 BY MR. CHRISTOPHER:
11 **Q. But your declaration didn't address arranging**
12 **the structure in such a way to deal with potential heat**
13 **problems. Correct?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Implicit in the combinations, a
16 POSITA would be motivated to make these combinations, and
17 I did not opine about heat as -- in my declaration, but
18 it wasn't necessary to do so. It's not -- a POSITA
19 wouldn't -- would know how to deal with it and the -- the
20 issues would not be something too much needed to be dealt
21 with.
22 BY MR. CHRISTOPHER:
23 **Q. In -- well, first of all, let's -- let's**
24 **actually take a step back.**
25 **You would agree that the components shown in**

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1 **Figure 1 of Lisogurski require a power source to operate.**
2 **Correct?**
3 A. Circuitry requires power, yes.
4 **Q. Right. And so in the case where a person of**
5 **skill in the art were to modify Lisogurski and to -- and**
6 **to put components from the monitor 104 inside the**
7 **sensor 102, what would a person of skill in the art use**
8 **as the power source?**
9 A. Well, for example, as I describe in Paragraph
10 99 at the bottom of Page 45, sensory --
11 **Q. The '533 declaration?**
12 A. Of the '533 declaration.
13 **Q. Okay. Sorry --**
14 A. Sensory unit may be -- sensory unit may be
15 powered by an internal power source, a battery. And
16 then, for example -- yeah, actually in Paragraph 96 on
17 Page 44 of the '533 (as read):
18 "Person of ordinary skill would have
19 understood that adding light drive
20 control circuitry would not have
21 negatively impacted the operation.
22 Person of ordinary skill would have
23 appreciated the modern electronics,
24 control of drive circuits, their design
25 compactness, power efficiency, ease of

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1 integration in mind, making them
2 well-suited within the form factor for a
3 wearable device. Their small size would
4 not add bulk or weight, and their
5 efficient power consumptions help
6 maintain the device's overall battery
7 life."
8 And -- let's see. Talking about Paragraph 99.
9 I talk about battery powering in 101. So, you know,
10 battery would be an appropriate way to power the
11 electronics.
12 **Q. Okay. So in the proposed modification of**
13 **Lisogurski, the electronics would be powered by a**
14 **battery. Correct?**
15 A. As I opined in the declaration, yes.
16 **Q. Sure. And a person of skill in the art would**
17 **understand that a battery would give off heat. Correct?**
18 MR. KIM: Objection, form.
19 THE WITNESS: A POSITA would understand how to
20 pick appropriate batteries in their design to enable a
21 device that can be powered by the battery and not have
22 negative effects, and batteries do not run that hot for
23 such a device for the power that would be needed, so
24 there's no issue.
25 ///

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1 BY MR. CHRISTOPHER:
2 **Q. But the battery would, in fact, generate at**
3 **least some amount of heat in operation. Correct?**
4 MR. KIM: Objection, form.
5 THE WITNESS: Again, the heat is not an issue
6 here. The low -- low power electronics powered by a
7 battery would -- low power, it's inher- -- it's low
8 power, and that low power is both in its operation.
9 Because it's low power, it's also low power in anything
10 that's dissipated. Low power, low dissipation meaning
11 low heat. So heat is not going to be an issue.
12 BY MR. CHRISTOPHER:
13 **Q. Well, maybe in your view, low heat, but there**
14 **is actually, in fact, heat generated by the battery. We**
15 **agree on that?**
16 MR. KIM: Objection, form.
17 THE WITNESS: The -- the presence of heat
18 that's generated by the circuitry and the operation of
19 the circuitry would not be a negative impact that the
20 POSITA wouldn't know how to appropriately design and pick
21 the components in order to realize their device in a form
22 factor and cost-effective way. And heat would not be an
23 issue.
24 BY MR. CHRISTOPHER:
25 **Q. And again, you didn't offer any opinions in**

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1 **your declaration with respect to managing heat in the**
2 **proposed combination modification of Lisogurski.**
3 **Correct?**
4 MR. KIM: Objection, form.
5 THE WITNESS: Well, I do talk about low power,
6 and the power -- low power again being low power of
7 operation, and low power also being minimal power to get
8 dissipated into heat. So I'm not directly discussing
9 heat, but it's implied in one of the factors that a
10 POSITA knows is addressed with modern electronics in the
11 way that I suggested combining them.
12 BY MR. CHRISTOPHER:
13 **Q. You didn't directly address heat in your**
14 **declaration. Correct?**
15 MR. KIM: Objection, form.
16 THE WITNESS: I addressed it through the
17 discussion of power. Power, then dissipation of power in
18 the operation of the circuit would generate low heat and
19 would not be an issue. It's low power, both in its
20 function and in any dissipation.
21 BY MR. CHRISTOPHER:
22 **Q. You haven't proposed any modifications to**
23 **Lisogurski to dissipate heat in your proposed**
24 **modification. Correct?**
25 MR. KIM: Objection, form.

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1 THE WITNESS: Just one second. My Adobe is --
2 I'm getting the spinning wheel. One second. Sorry.
3 BY MR. CHRISTOPHER:
4 **Q. No problem. It happens.**
5 A. Well, as I'm waiting for that, if I refer to
6 the paper version, again, on Page 96, I talk about -- I'm
7 sorry -- Paragraph 96 of my '533 declaration, at the top
8 of Page 44, for example (as read):
9 "A person of ordinary skill would have
10 appreciated that modern electronic
11 components, such as control and drive
12 circuits, are designed with compactness,
13 power efficiency" -- meaning not wasting
14 a lot of power, therefore not generating
15 a lot of heat -- "and ease of integration
16 in mind, making them well-suited for
17 integration within the form factor of a
18 wearable device."
19 So I talked about it through the lens of being
20 power and power efficient.
21 **Q. But you haven't proposed modifying Lisogurski**
22 **to dissipate heat. Correct?**
23 MR. KIM: Objection, form.
24 THE WITNESS: And then further in that
25 Paragraph (as read):

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1 "Their small size would not add
2 significant bulk or weight. Their
3 power" -- "their efficient power
4 consumption helps maintain the device's
5 overall battery life" -- meaning they're
6 being efficient; they're not wasting a
7 lot of energy; meaning they're not
8 generating heat. "As a result, person of
9 ordinary skill in the art would have
10 found the integration of the light drive
11 circuitry, while practical, feasible,
12 advantageous," et cetera.
13 BY MR. CHRISTOPHER:
14 **Q. Right. And I understand that you're contending**
15 **that the amount of heat generated is insufficient to have**
16 **to worry about, but my question is different. You**
17 **haven't proposed any modification to Lisogurski, any**
18 **additional components that dissipate any heat generated**
19 **by the device. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: Well, I mean, another example of
22 minimizing heat, for example, when we're moving things
23 proximal to each other so they don't need to propagate
24 very long, meaning wear a long wire. The wire or a trace
25 is nothing more than a resistor effectively. And so

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1 shortening those distances also would tend to dissipate
2 less heat. And so their bringing things together is
3 actually serving to reduce even further the amount of --
4 of dissipation for heat that's being generated.
5 MR. CHRISTOPHER: We've been going, I think,
6 roughly an hour. It's probably a good spot to take five.
7 Why don't we go off the record.
8 (Recess.)
9 MR. CHRISTOPHER: All right. Back on? All
10 right. Back on the record.
11 BY MR. CHRISTOPHER:
12 **Q. Dr. Anthony, welcome back.**
13 **Did you discuss your testimony with anyone**
14 **during our break?**
15 A. No.
16 **Q. Okay. I would like to direct your attention**
17 **now to Figure 2A of Lisogurski.**
18 **Let me know when you're there.**
19 A. Okay.
20 **Q. In Figure 2A, the Y axis in the plot is the**
21 **amplitude of the light drive signal. Correct?**
22 A. And the hori- -- vertical axis is the light
23 drive signal, yes.
24 **Q. And the horizontal axis is time. Correct? The**
25 **X axis?**

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1 A. Correct, yep.
2 **Q. Okay. And the light drive signal, that's the**
3 **signal from the light drive circuitry we were looking at**
4 **in Figure 1. Correct?**
5 A. The signal light source between the Red on
6 period 202, in the IR on period 204, yeah.
7 **Q. Well, sorry, that was a -- that was a little**
8 **quiet.**
9 **Did you say "yes" at the end of that?**
10 A. I was -- I was quoting from Lisogurski, the 202
11 correspondence light drive signal for the IR versus the
12 other one -- or the Red versus the other one, which is
13 the IR. 202 was the Red, 204 IR.
14 **Q. Perfect. And then you see reference**
15 **Number 220?**
16 A. Yes.
17 **Q. Okay. So that's between 202, which is the -- I**
18 **think you said the IR and then 204, which is the Red.**
19 **Correct?**
20 A. Each Red light on period 202 in IR is 2042 two
21 dark periods, 220.
22 **Q. Got it. And so during that dark period 220,**
23 **the light drive signal is zero. Correct?**
24 **Are you viewing a document right now?**
25 A. Looking at Lisogurski.

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1 **Q. Sure.**
2 A. Okay. Sorry. Can you reask the question?
3 **Q. Yeah. I'm just looking at Figure 2A and I'm**
4 **looking at the dark period 220. The light drive signal**
5 **that's reflected at the Y axis is zero during the dark**
6 **period. Correct?**
7 A. In that illustrative figure is -- and -- but I
8 also -- and what I was looking for, there's also
9 description in Lisogurski that talks about the off may
10 not be completely off at times. That it may be just
11 modulated up and down, as opposed to completely off.
12 **Q. Sure. But in -- at least in Figure 2A, this**
13 **particular example, it's here. Right?**
14 A. It's a -- it's a -- it's a illustrative. It's
15 plotted as zero there, yes.
16 **Q. And in this example, during dark period 220,**
17 **the emitter is turned off, it's not emitting any light.**
18 **Correct?**
19 A. Again, in that figure, that is sort of the --
20 what's shown, but Lisogurski also describes other
21 situations where it may not be completely on and off. It
22 does so in, for example, Column 29, in the Paragraph that
23 starts around Paragraph 38 -- or Line 38.
24 **Q. Understood. And then if we go down, same page**
25 **Figure 2B, you see it? It's Page 4 of the PDF, if you**

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1 **have Lisogurski in front of you.**
2 A. 2B. Yep.
3 **Q. All right. So in Figure 2B, the Y axis**
4 **represents detector current. Correct?**
5 A. Yes.
6 **Q. And the detector current is proportional to the**
7 **light that's incident on the detector. Correct?**
8 A. Well, it's proportional, as described there as
9 well, there's the dark current, which is present when
10 there's no light falling on it or some light, as is
11 alluded to the other description in Column 29.
12 **Q. Understood. So Reference Number 222 in**
13 **Figure 2B, that represents the dark period. Correct?**
14 A. Correct.
15 **Q. And we see, at the dark period 222 in**
16 **Figure 2B, the detector current is not zero. Correct?**
17 A. Correct. And that could be, as I described,
18 due to the -- the -- the dark current or the fact that
19 it's also that on and off may not be as extreme, as shown
20 in 2A.
21 **Q. Right. And that was my next question. But the**
22 **dark current is from ambient light. Correct -- actually,**
23 **strike that. Let me -- let me ask a better question.**
24 **In Figure 2B, if you assumed that the dark**
25 **period 222 is when the emitter is turned off, the current**

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1 **that we see at the dark period 222 would be caused by**
2 **ambient light on the detector. Correct?**
3 A. Well, for example, as is described in
4 Lisogurski in Column 16, Line 48, (as read):
5 "The first off portion and the second
6 off portion may be used to determine the
7 level of ambient light, noise, dark
8 current, other suitable signals or any
9 combination thereof."
10 So ambient light is -- there's -- there is -- a
11 detector will have a signal even when there's no light on
12 it. So a POSITA reading this would understand what's
13 embodied in that period where the light is not active, is
14 a combination of depending on how it's being timed and
15 configured. It could be ambient light, could be other
16 noise, could be the dark current, or some combination
17 thereof.
18 **Q. Understood. So in Figure 2B, the dark period**
19 **222, the -- the detector current we see on the Y axis,**
20 **that would represent noise. Correct?**
21 A. Well, as described there, ambient light, noise,
22 or dark current, or other combinations thereof, as
23 described by Lisogurski.
24 **Q. What -- what is the dark current?**
25 A. I just described that in the previous answer.

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1 Dark current is the current that's there. It's a diode,
2 it's a reverse bias. So even when there's no signal
3 there, it will have a -- well, even if there's no light
4 on it, it may have a signal present.
5 **Q. Got it. Now, Lisogurski discloses techniques**
6 **for subtracting the detector current at the dark period**
7 **from the detector current on the on period 214. Correct?**
8 A. I'm sorry. What -- what -- where are you
9 referring to?
10 **Q. Well, I'm just looking at Figure 2B. And based**
11 **on your review and knowledge of Lisogurski, my question**
12 **is: Lisogurski teaches that -- teaches techniques for**
13 **subtracting the detector current shown at period 222 from**
14 **the detector current shown at the on period 214.**
15 **Correct?**
16 A. So as described, for example, in Column 17 (as
17 read):
18 "The level of ambient light, noise,
19 dark current, or other suitable signals
20 or other combinations thereof, the system
21 may subtract that background or dark
22 level from the levels received during the
23 'on' period." Yeah.
24 **Q. Right. And so a person of skill in the art**
25 **would understand that subtracting the signals from the**

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1 **dark period would increase the signal-to-noise ratio of**
2 **the detector signal. Correct?**
3 A. Well, in the -- in that period of time, the --
4 it's the combination of dark current noise, ambient
5 light. So it's trying to compensate for those things
6 that are not the -- the distinct signal that you're
7 looking for. So in improving the signal to noise.
8 **Q. And a person of skill in the art would be**
9 **motivated to increase the signal-to-noise ratio on the**
10 **detection signal. Correct?**
11 A. In general, you know, there are trade-offs.
12 But, you know, in general, you want more signal.
13 **Q. Would a person of ordinary skill in the art be**
14 **motivated to maximize the signal-to-noise ratio of the**
15 **detection signal in Lisogurski?**
16 MR. KIM: Objection, form.
17 THE WITNESS: Well, I mean, a POSITA, in
18 their -- whatever they're trying to accomplish, knows
19 that signal-to-noise ratio is important relative to
20 whatever their design specs are.
21 So whether the signal-to-noise ratio is the
22 thing they're trying to maximize as a design parameter or
23 some -- some combination of signal-to-noise ratio with
24 other factors, it's certainly an important consideration
25 in the overall design space.

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1 BY MR. CHRISTOPHER:
2 **Q. Well, let me -- let me ask it this way: A**
3 **person of skill in the art would not have been motivated**
4 **to modify Lisogurski in a way that decreases the**
5 **signal-to-noise ratio of the detection signal. Correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, I mean, Lisogurski deals --
8 talks about a number of different ways of dealing with
9 signal to noise. Modulating the frequency, doing the
10 back -- background subtraction, et cetera.
11 And in -- by itself, you want good signal to
12 noise. A POSITA would consider signal to noise and how
13 much it needs to be maximized, along with other design
14 trade-offs, but in general, you know, they have the
15 biggest design budget. They'd want to have good
16 signal-to-noise ratio.
17 BY MR. CHRISTOPHER:
18 **Q. That's fair. So would you agree that, in**
19 **general, a person of skill in the art would have been**
20 **motivated to modify Lisogurski to decrease the**
21 **signal-to-noise ratio of the detection signal?**
22 MR. KIM: Objection, form.
23 THE WITNESS: Well, I didn't propose a -- any
24 motivation why somebody would combine to minimize, talk
25 about the combination with Carlson, for example, to

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1 increase the signal to noise. And so -- so in general,
2 you want more signal.
3 But, again, it's a -- it's not the only design
4 consideration and there are multiple ways to achieve good
5 signal-to-noise ratio. So you can take a hit -- say
6 there are three different -- four different ways to
7 improve signal to noise, you can take a hit on one of
8 them if you're improving the other one. Right?
9 So it's -- it's the overall signal-to-noise
10 budget that you're dealing with. So there may be, as
11 you're looking at your design space, factors that would
12 degrade one aspect of it, but improve another aspect of
13 it, so the overall signal-to-noise ratio.
14 But, again, I was not opining around
15 motivations to -- combined to minimize or to decrease
16 signal to noise.
17 BY MR. CHRISTOPHER:
18 **Q. And, again, I think that's a -- that's a fair**
19 **point. So let me -- let me just rephrase that to capture**
20 **what you said.**
21 A person of skill in the art would not have
22 been motivated to modify Lisogurski to decrease the
23 overall signal-to-noise ratio of the detection signal.
24 Correct?
25 A. Correct. We're motivating to -- you know, all

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1 things being isolated. Right? I mean, again, could a --
2 in a hypothetical situation, could a POSITA willingly
3 take a hit in signal to noise because it made the device
4 a thousand times cheaper? That would be a fair design
5 consideration that a POSITA would need to make. I didn't
6 opine upon that.
7 But yeah, that would -- sitting here now,
8 today, yeah, that could be something that me, as a
9 designer, could choose to do, if it's significantly
10 improving other design factors. All things being equal,
11 though, yeah, I'd like as much signal to noise as I can
12 and there are multiple ways to accomplish good signal to
13 noise.
14 **Q. Got it. Can you turn to Column 3 of**
15 **Lisogurski. And I'd like to direct your attention --**
16 **it's at Line 58. Let me know when you're there.**
17 A. Line 58?
18 **Q. Yeah. At Line -- in Line 58, Lisogurski**
19 **discloses that (as read):**
20 **"It may also be desirable to reduce**
21 **the power consumption by the light drive**
22 **signal to reduce heating effects caused**
23 **by an emitter."**
24 **Do you see that?**
25 A. Yes.

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1 **Q. And the emitter, we talked about this earlier,**
2 **that's an LED, for example. Correct?**
3 A. Yes.
4 **Q. And here, starting at Line 58 in Column 3,**
5 **Lisogurski discloses that it is desirable to reduce the**
6 **heating effects caused by emitter. Correct?**
7 A. Well, it says they may be desirable to reduce
8 power consumption, to reduce heating effects caused by an
9 emitter. But again, there are, as I was talking about,
10 the low power consumption, low dissipation that's, you
11 know, what we were talking about before. And here there
12 are multiple ways to accomplish both power consumption
13 and too much noise in the appropriate design trade-offs
14 to both.
15 **Q. Let's actually take a step back.**
16 A person of skill in the art would understand
17 that Lisogurski's reference to heating effects caused by
18 an emitter refers to heat that's generated by the
19 emitter. Correct?
20 A. Well, with Lisogurski there, in that sentence,
21 it may also be desirable to reduce power consumption by
22 the light drive signal to reduce heating effects caused
23 by an emitter.
24 So a POSITA reading the -- the Lisogurski in
25 its entirety, as I opined, that, you know, the other

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1 reason to bring things proximal to each other is, you
2 know, low -- fewer -- shorter wires, therefore, lower
3 resistance along the wires that are going to the emitter.
4 Depending on the emitter that a POSITA chooses to use,
5 that will dictate whether -- how much it's necessary to
6 potentially consider this in their overall design. But
7 there's, again, design trade-offs in -- in improving
8 overall performance.
9 **Q. Understood. I'm just trying to confirm a**
10 **person of skill in the art would understand heating**
11 **effects, and Line 59 of Lisogurski refers to heat that's**
12 **generated by the emitter. Correct?**
13 A. But the emitter includes the connection to the
14 emitter and the -- and the length of the wires connecting
15 to the emitter as well, and so modern LEDs, as I
16 discussed in the -- in the -- my declarations are also
17 increasingly low power and more power efficient. So
18 there may be some heat coming from inefficient or
19 relative inefficient emitters versus less heat coming
20 from more efficient emitters, and so it's not saying here
21 that you have to do this. You know, it may be. It
22 may -- POSITA reading this would understand the maybe is
23 a design consideration, taking the things that are taught
24 by Lisogurski into consideration when realizing their
25 particular substantiation of the device.

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1 **Q. So you would agree that Lisogurski discloses**
2 **that the heating effects caused by an emitter may be**
3 **undesirable. Would you agree with that?**
4 MR. KIM: Objection, form.
5 THE WITNESS: It may be desirable. It may be
6 desirable from both a power consumption perspective and,
7 you know, it may be desirable to reduce the power
8 consumption by the light drive signal to reduce the
9 heating effects. So POSITA reading that understands they
10 have a knob where they can consider reducing power. They
11 can reduce heat. And it's a -- it's a "may." It's a
12 design consideration. Well -- and it will be a factor of
13 which individual components they choose to use.
14 BY MR. CHRISTOPHER:
15 **Q. So my question was slightly different. A**
16 **person of skill in the art reading Lisogurski would**
17 **understand based on this disclosure, Lines 58 through 60**
18 **in Column 3, that the heating effects caused by an**
19 **emitter may be undesirable. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: Well, I mean, it's described
22 there, for example, in -- POSITA reading it may be
23 desirable to -- to think about both power and heating
24 with respect to the emitter. And then Column 5 it also
25 talks about the impact of the -- of the light source on

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1 the subject, you know, in -- in Column 5, to play with
2 the power consumption heating. But it's a function of
3 design consideration with the particular components and
4 the trend to low-power components and miniaturized
5 semiconductor technology at the time. POSITA would also
6 understand that that also further mitigates any issues
7 associated with needing to potentially do this.
8 BY MR. CHRISTOPHER:
9 **Q. You just mentioned "at the time."**
10 **What time frame are you referring to?**
11 A. In the time period where I eval- -- opine on
12 this in my 2019 declaration, the 2025 declaration, you
13 know, what the -- what a POSITA reading Lisogurski in
14 view of POSITA knowledge would understand.
15 **Q. In what time frame?**
16 A. So it is set -- described in Paragraph 5.
17 The priority purposes of declaration, priority
18 date of December 31st, 2012.
19 **Q. And if we can go back to more time, Column 3 of**
20 **Lisogurski, Lines 68 through -- 60 -- 58 through 60.**
21 A. I'm sorry, what column?
22 **Q. Column 3, Lines 58 through 60 of Lisogurski.**
23 **Would a person of skill in the art understand**
24 **that reducing the power consumption of a light drive**
25 **signal would reduce a potential source of noise with**

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1 **respect to the detector signal?**
2 MR. KIM: Objection, form and scope.
3 THE WITNESS: Well, I think I already answered
4 this. I mean, it may be desirable, and it's a design
5 trade-off but depending on the particular emitters that
6 they were using and the -- and the power consumption that
7 they're concerned with, these are some of the
8 considerations. But would some heat potentially be
9 generated? Is there a way to minimize that? Yes. By
10 picking different components, by picking, you know, a way
11 to do the signaling. So it may be. It's a function of
12 what their design choices are.
13 BY MR. CHRISTOPHER:
14 **Q. So my question is slightly different. I'm**
15 **driving at why is it desirable. It's desirable to reduce**
16 **the power consumption by the light drive signal in order**
17 **to reduce a potential source of noise with respect to the**
18 **detection signal. Correct?**
19 MR. KIM: Same objection.
20 THE WITNESS: Well, I mean, what's described
21 there may be -- may be desirable to reduce the power
22 consumption by the light drive signal to reduce the
23 heating effects so an LED, an emitter is -- has a
24 resistive component. Right? And so one potential
25 benefit is -- is saving power, and that power-saving is

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1 because we're minimizing -- if that LED is dissipating
2 heat, one way to minimize the heat that it's -- is by
3 reinstallation.
4 If the LED is not generating as much heat, then
5 you save -- you don't -- you're not as concerned with it,
6 and so you don't have to be as concerned with the power
7 consumption relative to a -- a less dissipative emitter.
8 BY MR. CHRISTOPHER:
9 **Q. Would a person of skill in the art understand**
10 **that reducing the power consumption by the light drive**
11 **signal to reduce heating effects caused by an emitter**
12 **would improve the signal-to-noise ratio of the detection**
13 **signal?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Can you repeat the question,
16 please?
17 BY MR. CHRISTOPHER:
18 **Q. Yeah. Would a person of skill in the art**
19 **reviewing Lisogurski understand that reducing the power**
20 **consumption by the light drive signal to reduce heating**
21 **effects caused by an emitter would increase the**
22 **signal-to-noise ratio of the detection signal?**
23 MR. KIM: Same objection.
24 THE WITNESS: Again, it's a -- it's a balance
25 of factors. It's a balance of any variation that's

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1 introduced because of -- of potential heating versus the
2 frequency with which data is being acquired. So it's not
3 necessarily reducing the signal to noise.
4 BY MR. CHRISTOPHER:
5 **Q. So fair point. Let me ask it slightly**
6 **differently.**
7 **All other factors being equal, would a person**
8 **of skill in the art understand that reducing the power**
9 **consumption by the light drive signal to reduce heating**
10 **effects caused by an emitter increase the signal-to-noise**
11 **ratio of the detection signal?**
12 MR. KIM: Objection, form.
13 THE WITNESS: It's impossible to consider it in
14 isolation. It's part of a -- it's part of a teaching
15 that sort of has these different ways of improving signal
16 to noise, different factors. And it may be. You know,
17 the "maybe" is indicative of, well, it depends on other
18 things. And so it's -- it's -- it's -- it's in context
19 of the multiple design axes that a POSITA would be
20 bringing to bear to accomplish a target signal-to-noise
21 ratio and power consumption and battery life and
22 manufacturability.
23 BY MR. CHRISTOPHER:
24 **Q. Right. And for purposes of this question, I'm**
25 **assuming -- I'm asking you to assume that all of those**

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1 **design axes otherwise remain the same. And so assuming**
2 **they all otherwise remain the same, would reducing the**
3 **power consumption by the light drive signal to reduce**
4 **heating effects increase the signal-to-noise ratio of the**
5 **detection signal?**
6 MR. KIM: Objection, form.
7 THE WITNESS: What those other axes are and
8 where they are on that particular space, it depends,
9 because it's not an independent thing. It's coupled to
10 the other design considerations.
11 BY MR. CHRISTOPHER:
12 **Q. So it's possible that reducing the power**
13 **consumption of the light drive signal to reduce heating**
14 **effects caused by an emitter would not impact the**
15 **signal-to-noise ratio of the detection signal?**
16 MR. KIM: Objection, form.
17 THE WITNESS: Again, I'm trying to convey it
18 may be desirable. It's a function of other factors
19 that's design trade-offs. POSITA reading Lisogurski in
20 its entirety understands what is taught, understands the
21 state of the art with respect to electronics and
22 miniature detectors and emitters. So the design space is
23 a coupled design space, and a POSITA would be motivated
24 to accomplish their design goal through adjustments along
25 the various design axes.

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1 BY MR. CHRISTOPHER:
2 **Q. Let me just back up and ask you this: Would a**
3 **person of skill in the art understand that the power**
4 **consumption by the light drive signal and the heating**
5 **effects by the emitter affect the detection signal --**
6 MR. KIM: He cut off.
7 THE COURT REPORTER: May we go off the record.
8 (Recess.)
9 BY MR. CHRISTOPHER:
10 **Q. All right. We're back on the record.**
11 **Apologies for the technical difficulties.**
12 **Before we went off, we were talking about**
13 **Column 3, Lines 58 through 60 of Lisogurski, and I don't**
14 **know if you caught any of this before I dropped off, but**
15 **I was trying to take a step back and just ask you whether**
16 **a person of skill in the art would understand that the**
17 **power consumption by the light drive signal would have**
18 **any impact on the signal-to-noise ratio of the detection**
19 **signal in Lisogurski.**
20 MR. KIM: Objection, form.
21 THE WITNESS: So as it described, you know, the
22 impact around any one factor is coupled to the other
23 aspects of the design. LEDs don't generate enough heat
24 to be a significant problem in general, and -- and you
25 want to balance power consumption, any -- any potential

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1 noise effects. But it's a trade-off. So, you know,
2 POSITA would understand, you know, all things being
3 equal, they're not. They're -- your design space is
4 balancing signal to noise and power consumption, cost,
5 usability. This does not teach away at all from being --
6 from miniaturizing the -- the emitters or combining
7 things in a smaller space. You know, heat here is -- is
8 a consideration, but it's not at all something that a
9 POSITA would be -- wouldn't know how to deal with it.
10 BY MR. CHRISTOPHER:
11 **Q. Understood. I'm just trying to confirm that**
12 **all things being equal, the heating effects caused by an**
13 **emitter could impact the signal-to-noise ratio. Correct?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Again, it depends on the design
16 factors, the LEDs that they've used, the other
17 electronics. And it's also highlighted there. "It may
18 be desirable." It's a "may." It depends is what it
19 means. It depends on these other things.
20 BY MR. CHRISTOPHER:
21 **Q. All right. Fair enough on that subject.**
22 **Can you turn to Column 36, Line 66 of**
23 **Lisogurski, which is on Page 50 of the PDF. Let me know**
24 **when you're there.**
25 A. Column 36, what line?

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1 **Q. Sixty-six, please. Very off, and then it**
2 **bridges on to the next page in Column 37.**
3 **Do you see Column 66 [sic]?**
4 A. Yep.
5 **Q. Okay. So start at -- we talked about this**
6 **earlier. So starting at Column 36, Line 66 of**
7 **Lisogurski, it discloses (as read):**
8 **"In some embodiments, the system may**
9 **detect a signal indicative of a system**
10 **error such as a physiological impossible**
11 **value, a probe-off signal, any other**
12 **suitable signal, or any combination**
13 **thereof."**
14 **Do you see that?**
15 A. Yes.
16 **Q. What would a person of skill in the art**
17 **understand that the term "system error" refers to?**
18 A. Well, as described there, in isolation, (as
19 read):
20 "In some embodiments, the system may
21 detect a signal of indicative of a system
22 error such as a physiologically
23 impossible value, a probe-off signal, any
24 other suitable signal, or any combination
25 thereof. The system may detect the

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1 physiological condition using information
2 obtained through the measurements in
3 step 1902."
4 So its -- those are examples, system errors,
5 physiological impossible value, probe-off signal, any
6 other suitable signal.
7 **Q. Let me see if I understand this.**
8 **So a physiologically impossible value, that's a**
9 **system error. Correct?**
10 A. Well, what's described there in that sentence,
11 (as read):
12 "In some embodiments, the system may
13 detect a signal indicative of a system
14 error, such as a physiologically
15 impossible value, a probe-off signal, or
16 any other suitable signal, or combination
17 thereof."
18 **Q. Right. So in that -- starting at Line 66 and**
19 **going down to Line 67, it refers -- "it" being**
20 **Lisogurski -- Lisogurski refers to (as read):**
21 **"A signal indicative of a system**
22 **error."**
23 **Do you see that?**
24 A. Yes.
25 **Q. And then it goes on to say (as read):**

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1 **"Such a physiologically impossible**
2 **value."**
3 **Right?**
4 A. Yes.
5 **Q. Okay. What is the system error?**
6 A. Well, that sentence describing examples (as
7 read):
8 "A system error, such as a
9 physiologically impossible value to a
10 probe-off signal, any other suitable
11 signal, or combination thereof."
12 **Q. So in your view, a physiological impossible**
13 **value and a probe-off signal are examples of system**
14 **errors. Is that correct?**
15 **Sorry. Are you just reviewing Lisogurski or...**
16 A. I'm -- I'm looking at Liso- -- I'm reviewing
17 Lisogurski.
18 **Q. Sure.**
19 A. Well, I mean, that sentence is in the context
20 of what's being described in step 1904, which is
21 described in Figure 19. There's -- 1902 is (as read):
22 "Performing a physiological
23 measurement in the first mode."
24 That's 1902. (As read):
25 "Detect a physiological condition."

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1 1904.
2 "Perform a second measurement in the
3 second mode." 1906.
4 And 1904, that Paragraph from which we were
5 pointing in step 1904 (as read):
6 "The system may detect a physiological
7 condition."
8 Gives some examples of heartbeats, tachycardia,
9 cardiac irregularity (as read):
10 "The system may also detect no
11 heartbeat."
12 And then in some embodiments, presumptively in
13 that step (as read):
14 "The system may false positive detect
15 a physiological condition in the presence
16 of noise, ambient light, a loss of
17 detector signal, any other suitable
18 reason, or any combination thereof. And
19 in some embodiments, the system may
20 detect a physiological parameter. For
21 example, a low blood oxygen saturation,
22 low pulse rate."
23 It goes on and then back to where you were
24 pointing (as read):
25 "In some embodiments, the system may

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1 detect a signal indicative of a system
2 error, such as a physiologically
3 impossible value, a probe-off signal, any
4 other suitable signal, or any combination
5 thereof. The system may detect the
6 physiological condition using the
7 information obtained through the
8 measurement in 1902, from an external
9 sensor or controller, by any other
10 suitable techniques, or any combination
11 thereof."
12 So can you repeat your question now?
13 **Q. Yes.**
14 A. Because in the context, it's becoming -- okay.
15 **Q. And this goes back to your testimony from a**
16 **moment ago.**
17 **Is it your view that a physiologically**
18 **impossible value in a probe-off signal are examples of**
19 **system errors in Lisogurski?**
20 MR. KIM: Objection, form.
21 THE WITNESS: Well, again, I -- I didn't need
22 to opine about this particular sentence in isolation.
23 But, you know, in some embodiments, that a system may
24 detect an error and that error could be that the probe is
25 off, there's something else going on, including a -- a

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1 physiologically impossible value or other probe-off
2 signal.
3 BY MR. CHRISTOPHER:
4 **Q. Any other system errors in Lisogurski, aside**
5 **from the physiological impossible value or probe-off**
6 **signal?**
7 A. I'm sorry. Repeat that again.
8 **Q. Yeah. Yeah. I'm just trying -- I'm just**
9 **trying to understand.**
10 **Having now read that entire section in context,**
11 **can you identify any other system errors, as that term is**
12 **used in Line 67 in Column 36, other than the**
13 **physiologically impossible value in the probe-off signal?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Well, for -- for example, just
16 continuing on that column in 37, in some embodiments, the
17 system may detect a condition where a second mode is
18 required that it's not related to a physiological
19 condition. So the system may detect a change in
20 background noise and change in ambient light, change in
21 available power.
22 So the system may perform physiological
23 measurements in a -- in a second mode. It can adjust for
24 low -- low signal, potentially, and in -- in a number of
25 ways.

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1 BY MR. CHRISTOPHER:
2 **Q. Those functionalities you just described, would**
3 **a person of skill in the art understand those to be**
4 **system errors?**
5 A. Yeah. I mean, that's sort of the -- the system
6 is the -- it's a system that's trying to measure a thing.
7 Right? And that is -- it's not -- that system isn't
8 necessarily a -- the system is the -- includes the
9 interaction with the -- the object being measured, the
10 person being measured.
11 And so having other aspects that impact the
12 overall system, such as high light or low -- high ambient
13 light, to compensate for that would be an example of
14 something that could be determined from that error
15 signal.
16 **Q. Lisogurski doesn't disclose what the system**
17 **does upon detecting a signal indicative of a system**
18 **error. Correct?**
19 **Are you currently reviewing Lisogurski?**
20 A. Yes.
21 **Q. Okay.**
22 A. Well, for example, I mean, as it goes on and
23 describes there, as a result of that potentially
24 physiologically unrealizable possible value that could
25 come from insufficient signal to noise. And so doing

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1 things like increasing the amount of light, increasing
2 emitter intensity, as it describes in the next Paragraph.
3 **Q. What about the probe-off signal? What does**
4 **Lisogurski do in response to detecting a probe-off**
5 **signal?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, a probe-off signal, just
8 opining about it here momentarily, not to be opined upon
9 that specific thing in isolation, but probe-off can be
10 partially on versus completely off.
11 So, for example, small probe-off, a little bit
12 of offness, if you will, could be adjusted with -- you
13 know, that's a source of noise. So in the -- the
14 intensity of light being increased to compensate for an
15 increase in the gap, for example, between the sensor and
16 the -- the person as a result of motion would be a very
17 natural understanding of a POSITA reading this, of a way
18 that he -- Lisogurski describes in responding to that --
19 that system error.
20 BY MR. CHRISTOPHER:
21 **Q. So one example of a probe-off signal would be**
22 **that it's indicative of the device being worn, but**
23 **lacking sufficient contact with the person. Is that**
24 **right?**
25 A. Well, "probe-off" means that it's,

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1 presumptively, either turned off or -- or not purposely
2 connected to the -- or as well attached to the person as
3 it could be.
4 **Q. You mentioned "turned off."**
5 **The probe-off signal could mean that the probe**
6 **is just simply turned off. Correct?**
7 A. Again, I didn't need to -- I wasn't opining
8 upon exactly what "probe-off" meant here. But I think
9 sitting here today, I think it's better interpreted as a
10 disconnection between the probe and the -- and the body.
11 **Q. Could "probe-off" be interpreted by a person of**
12 **skill in the art as referring to the -- the probe just**
13 **being turned off?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Well, at that point, if the probe
16 is turned off, you're not getting any signals. So I
17 think that's probably unlikely.
18 BY MR. CHRISTOPHER:
19 **Q. Got it.**
20 **Do you recall discussing earlier the detector**
21 **current signal during the dark period, for example, as**
22 **shown in Figure 2B of Lisogurski?**
23 A. Yes.
24 **Q. The dark signal would not be considered a**
25 **signal indicative of a system error. Correct?**

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1 MR. KIM: Objection, form.
2 BY MR. CHRISTOPHER:
3 **Q. Are you reviewing any document right now?**
4 A. The Lisogurski.
5 So you -- you asked about the -- the off
6 period. I mean, that -- we discussed that before. That
7 is indicative -- it has certain information about ambient
8 light, noise, dark current. And so that ambient light
9 is -- more ambient light would be indicative of probe,
10 potentially, being less rigidly connected -- or
11 informally attached to the -- the wearer.
12 **Q. Can we turn to your declaration for the**
13 **'304 patent. This is Exhibit 1003 in IPR2025-01251.**
14 A. And I'm going to be using just paper for at
15 least the next 15 minutes, since Adobe has crashed again.
16 **Q. Fair enough. And I'll try to get you some page**
17 **numbers while we're doing this, to speed it up.**
18 **Can you turn to Paragraph 109 of your**
19 **declaration from the '304 patent. This would be on**
20 **page -- using the internal pagination, Page 62. If**
21 **you're using the page number in the bottom right corner.**
22 **It's Page 65.**
23 A. So Paragraph 109?
24 **Q. Yeah. Paragraph 109, yeah.**
25 A. Okay.

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1 **Q. So here in Paragraph 109, you address**
2 **Element [1.pre] of Claim 1 of the '304 patent. Correct?**
3 A. Yes.
4 **Q. And then in Paragraph 110, you note that the**
5 **board previously found this identical limitation was met**
6 **by Lisogurski in the prior '533 IPR.**
7 **Do you see that?**
8 A. Yes.
9 **Q. And so you rely on the prior decision for the**
10 **'533 patent in connection with Element [1.pre]. Correct?**
11 MR. KIM: Objection, form.
12 THE WITNESS: No, I'm not -- I mean, I'm
13 boarding their opinions; I agree with their opinion. I'm
14 not relying on their opinion. You know, this is
15 consistent with the opinions that I made in the prior
16 declaration. So this -- you know.
17 BY MR. CHRISTOPHER:
18 **Q. So you're not relying on the board's findings**
19 **in the prior decision the '533 patent in your**
20 **declaration?**
21 MR. KIM: Same objection.
22 THE WITNESS: So -- so as I described, the
23 board -- in Paragraph 110 (as read):
24 "The board previously found this
25 identical limitation was met by

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1 Lisogurski in the prior '533 IPR, in
2 particular to meet a measurement system,"
3 et cetera. Goes down.
4 And this is consistent with my opinions
5 regarding the '533 limitation provided in my prior '533
6 declaration, right. Which you know all these things are
7 represented in my prior '533 declaration. That's what I
8 agree with, as well as the board agreed. And I'm just
9 re-agreeing with myself through the lens of what the
10 board said.
11 BY MR. CHRISTOPHER:
12 **Q. Okay. And so you cite your prior declaration**
13 **from the '533 patent is support for your opinion here for**
14 **Element [1.pre]. Correct?**
15 A. Yeah.
16 **Q. And, you know, earlier we talked about you had**
17 **a prior declaration for the '484 patent.**
18 **You recall that?**
19 A. Yes.
20 **Q. And you don't cite your prior declaration for**
21 **the '484 patent for Element [1.pre] in the '304 patent.**
22 **Correct?**
23 **Are you reviewing a different portion of the**
24 **declaration?**
25 A. I'm just looking. I know I reference the

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1 other -- I'm just reading this.
2 **Q. So just to be clear, I'm just asking about**
3 **Element [1.pre] which you address in paragraphs 109 and**
4 **110. You don't cite the board's prior decision**
5 **concerning the '484 patent in paragraphs 109 or 110 of**
6 **your declaration. Correct?**
7 A. In those paragraphs, I reference that I point
8 to my agreement with what the board had identified,
9 but -- so consistent with my opinions regarding the '533.
10 **Q. But not the '484 -- strike that.**
11 **But you don't cite your prior declaration for**
12 **the '484 patent. Correct?**
13 A. Not in [1.pre] I do not. Later on I -- further
14 on, I do under [1.a] I believe it is. But -- yeah, in
15 [1.a] I also reference my prior '484 declaration as well,
16 but in that Paragraph I do.
17 **Q. Where do you see that for Element [1.a]?**
18 A. When I get to, for example, Paragraph 115, I
19 talk about the prior '484, and then in Paragraph 116,
20 there's the -- at the end there, my '484 Anthony.
21 **Q. Sure. So if we -- if we actually turn now,**
22 **this is under Element [1.a], Paragraph 115, this is, if**
23 **you're looking at the page number in the middle, Page 66.**
24 **Are you there?**
25 A. Yes.

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1 **Q. Okay. Paragraph 115 you wrote (as read):**
2 **"Though the '533 limitations do not**
3 **recite increasing a light intensity**
4 **'relative to an initial light intensity'**
5 **as recited in this '304 limitation, the**
6 **board found a substantially identical**
7 **limitation met by the same embodiment of**
8 **Lisogurski in the prior '484 IPR."**
9 **Do you see that?**
10 A. Yes.
11 **Q. And so do you agree that the board's decision**
12 **for the '533 patent did not address the claim language**
13 **relative to an initial light intensity as recited in**
14 **Element [1.a] of the '304 patent. Correct?**
15 MR. KIM: Objection, form.
16 THE WITNESS: Well, as I describe in Paragraph
17 115, the '533 limitations do not recite increasing a
18 light intensity relative to initial light intensity. The
19 board did find a substantially identical limitation met
20 by the same embodiment of Lisogurski in the prior '484.
21 And I go on to describe that in particular, Lisogurski
22 increases light intensity of at least one of the
23 plurality of semiconductor sources from an initial light
24 intensity.
25 And this is consistent as I go down there with

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1 my opinions on the '484, which I incorporate.
2 BY MR. CHRISTOPHER:
3 **Q. And then if you scroll up to Paragraph 113.**
4 **Let me know when you're there.**
5 A. Yeah, 113?
6 **Q. Sure. So in Paragraph 113, you refer to claim**
7 **language in the '533 patent that overlaps with**
8 **Element [1.a] in the '304 patent. Correct?**
9 **Still reading Paragraph 113?**
10 A. I'm looking back at the '533 patent, which
11 recites -- let's see. So in 113, yes. So that's the
12 light source -- let's see. Plurality. Semiconductor
13 sources. Light-emitting diodes. Configured to generate
14 output beams. Yes. Subset of the language in the
15 corresponding '304. Yes.
16 Okay. So -- yes. And your question was,
17 sorry?
18 **Q. Just more generally, in Element [1.a], you cite**
19 **both the prior decision for the '533 patent and you cite**
20 **the prior decision for the '484 patent. Correct?**
21 A. Yes.
22 **Q. But you would agree that neither prior decision**
23 **standing alone addresses each and every limitation within**
24 **Element [1.a] in the '304 patent. Correct?**
25 MR. KIM: Objection, form.

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1 THE WITNESS: Well, Lisogurski is what is
2 teaching -- knowledge of POSITA is what is being taught
3 here. I'm referencing the prior decisions as -- that I
4 agree with.
5 So again, self-referentially, this is what I
6 opined about in both the prior, but in both of those it's
7 Lisogurski that is the -- at the...
8 MR. CHRISTOPHER: He may have frozen.
9 THE COURT REPORTER: I'm sorry. Mr. Anthony,
10 can you repeat your answer?
11 THE WITNESS: Certainly. I don't know how far
12 back you want me to go, but what is being -- Lisogurski
13 is what I'm referring to in teaching the limitations, and
14 I'm referring back to the prior decisions with respect to
15 Lisogurski knowledge of POSITA, so it's with --
16 Lisogurski is what is revealing in the knowledge of a
17 POSITA is what is making these claims obvious.
18 BY MR. CHRISTOPHER:
19 **Q. Wasn't quite my question, which was: Neither**
20 **of the prior decisions standing alone address all of the**
21 **elements and limitations in Element [1.a] in Claim 1 of**
22 **the '304 patent. Correct?**
23 MR. KIM: Objection, form.
24 THE WITNESS: You asked the question in the
25 sense of I was relying on those decisions. What I'm

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1 relying on is Lisogurski, and those prior decisions I
2 also refer to in both the '533 and the '480 -- '484 as
3 corroborating what I previously said in the prior
4 declarations. It's Lisogurski that is meeting these
5 limitations and the knowledge of a POSITA.
6 BY MR. CHRISTOPHER:
7 **Q. Again, that's not my question.**
8 **You've reviewed the prior decision for the**
9 **'533 patent. Correct?**
10 A. Yes.
11 **Q. And you've also reviewed the prior decision for**
12 **the '484 patent. Correct?**
13 A. Yes.
14 **Q. And so you cite -- I understand you're saying**
15 **you're not relying on it. You cite the '533 decision,**
16 **the prior decision, for certain aspects of Element [1.a]**
17 **in Claim 1 of the '304 patent. Correct?**
18 A. I'm citing --
19 MR. KIM: Objection, form.
20 Sorry.
21 THE WITNESS: I'm citing those decisions, but
22 I'm citing them through the lens of Lisogurski and what
23 Lisogurski discloses, and I'm pointing to those as I'm
24 agreeing to what was found there. But it's Lisogurski
25 and the knowledge of a POSITA that's the underlying, and

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1 so I'm relying on Lisogurski that shows up both in the
2 prior '533 and the prior '484.
3 BY MR. CHRISTOPHER:
4 **Q. Understood. But based on your review and**
5 **citations to the prior decisions, you would agree that**
6 **neither prior decision standing alone addressed all**
7 **aspects of Element [1.a] in the '304 patent. Correct?**
8 MR. KIM: Objection, form.
9 THE WITNESS: Well, in forming my opinions
10 here, I wasn't relying on just saying what the board find
11 in one and does that exactly meet everything or does the
12 other?
13 I'm relying on my opinions with respect to
14 Lisogurski and knowledge of a POSITA, which were also
15 used in the '5 -- prior '533 and the '484. So I'm
16 quoting from -- or highlighting what's cons- -- I'm --
17 it's consistent with what I previously argued on the
18 prior, and both of those are built on Lisogurski and
19 knowledge of a POSITA.
20 BY MR. CHRISTOPHER:
21 **Q. We'll say it this way: Go back to Paragraph**
22 **115. We talked about this a moment ago. You agree that**
23 **the claims of the '533 patent did not recite the phrase**
24 **"relative to an initial light intensity." Correct?**
25 A. But then I go on in that Paragraph. But the

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1 identical limitation is met by the same embodiment of
2 Lisogurski in the prior '484. So I'm -- I'm referencing
3 Lisogurski as the underpinning for both of those, what
4 I -- prior disclosure -- or my prior depos- --
5 declarations and -- with which the board agreed with.
6 I'm also agreeing with what they agreed with what I said.
7 **Q. Understood. You got ahead of me a little bit.**
8 **If the '533 patent didn't have the phrase**
9 **"relative to an initial light intensity" in any of the**
10 **claims, you would agree that the prior decision for the**
11 **'533 patent didn't address a claim that recites "relative**
12 **to a initial light intensity." Correct?**
13 A. I would go back at this point and look at my
14 prior declaration, which I can't do because I did not
15 print it out and Adobe has crashed. However, again, I'm
16 highlighting what Lisogurski teaches, and it certainly
17 teaches increasing the light intensity.
18 And it may have not showed up in the prior '533
19 arguments, but it certainly, through the '484, is met, as
20 I described, and Lisogurski is used for both the '484,
21 prior '484, the prior '533, and here. And Lisogurski
22 indeed does teach that increasing the light intensity.
23 **Q. Well, let me -- let me try asking it this way:**
24 **If the phrase "relative to an initial light intensity" in**
25 **Element [1.a] were addressed in the prior '533 decision,**

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1 **you would have cited that here in your declaration for**
2 **Element [1.a]. Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: All this is -- is what I'm citing
5 fundamentally is Lisogurski in the prior art. And
6 Lisogurski and knowledge of a POSITA was what was used in
7 the prior. And so what I'm point -- what I'm
8 fundamentally using is Lisogurski and knowledge of a
9 POSITA and also highlighting how those things showed up
10 as well in the prior. But Lisogurski is what's teaching
11 it as is described further in Paragraph 116.
12 BY MR. CHRISTOPHER:
13 **Q. He's not answering my question. The prior '533**
14 **decision that you reviewed and that you cite in your**
15 **declaration as support for your opinions didn't address**
16 **the claim phrase "relative to an initial light**
17 **intensity." Correct?**
18 A. As I state in Paragraph 115, but identical
19 limitations are indeed met by the same embodiment of
20 Lisogurski, which were used in the '484.
21 **Q. So the answer to my prior question is yes, the**
22 **prior '533 decision did not address the phrase "relative**
23 **to an initial light intensity." Correct?**
24 A. Lisogurski and knowledge of a POSITA is what I
25 used in both my opinions of '533 and '484. Didn't

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1 address the "relative to light intensity" part of '533,
2 but I did in '484, and so I'm highlighting how Lisogurski
3 is used in those prior, or not, and how its used in the
4 current.
5 **Q. So to be clear, the prior '533 declaration that**
6 **you authored did not address the claim requirement,**
7 **quote, "relative to an initial light intensity."**
8 **Correct?**
9 A. As I described in Paragraph --
10 MR. KIM: Objection, form.
11 THE WITNESS: As I described in Paragraph 115,
12 I didn't address it in the '533 prior, I did address it
13 in the '484. But everything is built on Lisogurski and
14 knowledge of a POSITA, which is what I'm describing here.
15 MR. CHRISTOPHER: Well, why don't we go off and
16 take our lunch break.
17 (Whereupon, at the hour of 10:02 a.m., a
18 luncheon recess was taken.)
19 * * *
20 ///
21 ///
22 ///
23 ///
24 ///
25 ///

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1 HELD VIA VIDEOCONFERENCE
2 FRIDAY, APRIL 17, 2026
3 10:38 A.M. - 2:29 P.M.
4 * * *
5 BRIAN W. ANTHONY,
6 HAVING PREVIOUSLY BEEN DULY ADMINISTERED AN OATH,
7 WAS EXAMINED AND TESTIFIED AS FOLLOWS:
8
9 MR. CHRISTOPHER: All right. Back on the
10 record.
11
12 EXAMINATION (resumed)
13 BY MR. CHRISTOPHER:
14 **Q. Welcome back, Dr. Anthony. Did you discuss the**
15 **substance of your testimony with anyone during our lunch**
16 **break?**
17 A. No.
18 **Q. Okay. So before the lunch break, we were**
19 **discussing your declaration for the '304 patent in**
20 **IPR2025-01251. And I'd like to now direct your attention**
21 **to Paragraph 133 of that declaration.**
22 **If you have the PDF, it's Page 76 of the PDF.**
23 A. I'm there.
24 **Q. Perfect. Okay. So in Paragraph 133, you**
25 **address Element [1.f] in Claim 1 of the '304 patent.**

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1 **Correct?**
2 A. Yes. And then in the next Paragraph,
3 Paragraph 134, you wrote (as read):
4 "This limitation includes language
5 that was already determined unpatentable
6 by the board in the '533-IPR ('generate
7 an output signal') and new language that
8 was not previously considered
9 ('representing at least in part a
10 non-evasive measurement on blood
11 contained within the sample')."
12 Do you see that?
13 A. Yes.
14 **Q. And so you agree that the phrase "representing**
15 **at least in part a non-invasive measurement on blood**
16 **contained within the sample" in Element [1.f] was not**
17 **considered during the prior '533-IPR. Correct?**
18 **Are you currently reviewing a document?**
19 A. I'm looking back at the '533 just to confirm
20 that -- the figures.
21 So yeah, they say here the -- generate an
22 output signal was addressed in the '533-IPR. The --
23 representing at least in part a non-invasive measurement
24 on blood contained within the sample. It's new here.
25 **Q. Okay. And if we turn now to Paragraph 136, in**

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1 **Paragraph 136, you address the additional resuscitation**
2 **of the output signal representing, at least in part, a**
3 **non-invasive measurement on blood within the sample.**
4 **Correct?**
5 A. Yes.
6 **Q. And you don't cite the prior '484-IPR decision**
7 **here in Paragraph 136. Correct?**
8 A. I'm describing it throughout, how Lisogurski
9 discloses knowledge of a POSITA. But here, I'm not
10 referring back to a prior, I'm -- I'm explaining how
11 Lisogurski meets the limitation.
12 **Q. So to recap, neither of the prior decisions,**
13 **the '533 or the '484, address the requirements in**
14 **Element [1.f] of the '304 patent, representing at least**
15 **in part, a non-invasive measurement on blood contained**
16 **within the sample. Correct?**
17 MR. KIM: Objection, form.
18 THE WITNESS: As I described in -- in 136, I'm
19 not referring back to the prior declarations. I'm
20 highlighting how Lisogurski discloses that there's a
21 detection signal generated by detector 140, and may be
22 processed by front-end circuitry 150. And from the
23 process signal, physiological parameters may be
24 determined, e.g., based on the absorption of the Red and
25 IR wavelength. That's Lisogurski Column 11, 13 through

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1 27.
2 As Lisogurski teaches, these absorption levels
3 in the tissue are used by the detector 140 to
4 non-invasively measure the oxygen saturation of a
5 patient's blood to perform pulse oximetry, referencing
6 the Figures 1, 3, and then the Column 3 through 4, and
7 Columns 10 and 17.
8 The process detection signal is an output
9 signal generated by the detector. As modified in the
10 prior discussion and motivations to modify, it
11 represents, at least in part, a non-invasive measurement
12 on blood contained within the subject's tissue.
13 MR. CHRISTOPHER: All right. Move to strike as
14 nonresponsive.
15 BY MR. CHRISTOPHER:
16 **Q. The question was: Neither of the prior**
17 **decisions, the '533 or the '484, address the additional**
18 **requirement representing, at least in part, a**
19 **non-invasive measurement on blood contained within the**
20 **sample in Element [1.f]. Correct?**
21 MR. KIM: Objection, form.
22 THE WITNESS: I did answer that previously. I
23 said, I'm not referring to the prior declarations here,
24 but I'm highlighting how Lisogurski meets the limitation
25 and knowledge of the POSITA.

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1 BY MR. CHRISTOPHER:
2 **Q. So -- so you agree, neither of the prior**
3 **declarations expressly address this additional**
4 **requirement in Element [1.f]. Correct?**
5 MR. KIM: Same objection.
6 THE WITNESS: I highlight here how Lisogurski
7 meets the limitation and I did not reference the prior
8 declarations, but I'm explaining here how Lisogurski is
9 meeting it and knowledge of a POSITA.
10 BY MR. CHRISTOPHER:
11 **Q. Okay. If you could turn now to Paragraph 143**
12 **in your declaration for the '304 patent.**
13 A. I'm sorry. What Paragraph?
14 **Q. Paragraph 143. Let me know when you're there.**
15 A. Yes.
16 **Q. Here, you address Element [1.h] of the**
17 **'304 patent. Correct?**
18 A. Yes.
19 **Q. And Element [1.h] requires (as read):**
20 **"Capture light while the semiconductor**
21 **sources are off and convert the captured**
22 **light into a first signal."**
23 **Do you see that?**
24 A. Yes.
25 **Q. What does it mean to a person of ordinary skill**

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1 **in the art to convert the captured light into a first**
2 **signal?**
3 A. So, for example, as I described on page --
4 Paragraph 145, on Page 81, or Page 84 of the PDF, I'm not
5 sure which is which -- 81 or -- Paragraph 145, (as read):
6 "Lisogurski detector receives and
7 captures ambient light during 'off'
8 period when the LEDs are off and converts
9 the captured light into or generate a
10 'dark signal' by measuring the current
11 when the LEDs are off."
12 Highlighting where Lisogurski describes that.
13 Thus, the differences between the -- the terms
14 that were used in the -- the '484, which would "generate
15 a first signal" as opposed to "convert the captured light
16 into a first signal" don't change my analysis that
17 Lisogurski discloses this. But it's the signal that is
18 being acquired during the -- the period of time when the
19 sources are off.
20 **Q. Let's go to Paragraph 145 of your declaration.**
21 **At the top, this is your PDF Page 83. Let me know when**
22 **you're at 145.**
23 A. Yep.
24 Q. Okay. The first sentence you wrote (as
25 read):

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1 "The '304 patent" -- strike that.
2 You didn't say the word "the."
3 Let's start over (as read):
4 "304 patent element [1.h] is
5 substantially similar to the
6 corresponding limitation in the
7 '484 patent on which I previously
8 opined."
9 Do you see that?
10 A. Yes.
11 **Q. And so you agree that Element [1.h] is not**
12 **identical to the corresponding limitation in the**
13 **'484 patent. Correct?**
14 A. Well, they describe further in that Paragraph,
15 either a slightly different use of phrase, the main
16 difference being the two limitations. '484 uses
17 "generate a first signal," as opposed to '304, "use of
18 convert to capture light into a first signal."
19 And then the '484, "used a light received, "as
20 opposed to '304's use of "captured light." The
21 limitations use, indeed, slightly different language, as
22 I say here. It covers substantially the same concept and
23 the disclosure from Lisogurski relied upon previously in
24 the '484 that I opined on in my prior declaration, and
25 the board agreed with, and I agreed with them,

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1 Lisogurski's detector receives and captures ambient light
2 during the off periods, when the LEDs are off, converts
3 that captured light into a -- or generates a dark signal
4 by measuring the current when the LEDs are off.
5 **Q. So we agree that they're not identical,**
6 **Element [1.h] in the '304 patent and Claim 1 in the**
7 **'484 patent. Correct?**
8 A. Well, as I described here, is they slightly use
9 different terms of phrase, but they cover substantially
10 the same concept.
11 **Q. Wouldn't a person of ordinary skill in the art**
12 **know that it's possible to generate a first signal**
13 **responsive to light without performing any conversion on**
14 **the light?**
15 A. I'm sorry, can you repeat that question?
16 **Q. Yeah. A person of skill in the art would**
17 **understand that it's possible to generate a first signal**
18 **responsive to light received while the light emitting**
19 **diodes are off without actually performing any conversion**
20 **on the light. Correct?**
21 A. Well, as I say, again, the -- it's -- both are
22 capturing the similar -- the same concept, you know,
23 your -- an LED, a semiconductor detector converts photons
24 to electrons. Light is being received and converted or
25 generating a signal. It's, again, the same -- same

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1 concept.
2 **Q. Well, I don't think that quite answers the**
3 **question, though, which is: It's -- it's possible to**
4 **generate a signal responsive to light being received**
5 **without actually converting the light. Correct?**
6 A. Well, with -- without a doubt Lisogurski
7 describes the detector that captures light during an off
8 period, measures the current when the LEDs are off and
9 generating a signal that corresponds to that.
10 So it's capturing -- it's clearly disclosing
11 the captured light while the semiconductor sources are
12 off and converting that captured light into a first
13 signal.
14 MR. CHRISTOPHER: Move to strike as
15 nonresponsive.
16 BY MR. CHRISTOPHER:
17 **Q. My question's not about Lisogurski. It's about**
18 **the claim language in the '304 patent and the claim**
19 **language in the '484 patent.**
20 **And the question is: Would a person of skill**
21 **in the art understand that it's possible to generate a**
22 **first signal responsive to light received without**
23 **converting the received light?**
24 A. In forming my opinions, I didn't need to opine
25 upon how a POSITA, or looking at that word, "convert" or

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1 "generate," would consider them in isolation. But what
2 I'm highlighting is, indeed, Lisogurski teaches the
3 concept of capturing light and generating a signal when
4 the signals are -- when the lights are off.
5 MR. KIM: Sorry, I was on mute. I just
6 objected on the form and I also disagree that the witness
7 was being nonresponsive.
8 Sorry about that.
9 BY MR. CHRISTOPHER:
10 **Q. Is it your opinion that Element [1.h] in the**
11 **'304 patent has the exact same scope with the phrase**
12 **"generate a first signal responsive to light received**
13 **while the light-emitting diodes are off" in the Claim 1**
14 **of the '484 patent?**
15 MR. KIM: Objection, form.
16 THE WITNESS: I wasn't opining and didn't need
17 to opine in my -- forming my opinions as to whether they
18 entailed exactly the same, but, indeed, POSITA reading
19 Lisogurski in view of the knowledge a POSITA would
20 understand, that it does disclose capturing light while
21 the semiconductor sources are off and converting that
22 captured light into a first signal.
23 BY MR. CHRISTOPHER:
24 **Q. So your opinion is Lisogurski meets both**
25 **claims, but you don't have any opinions on whether**

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1 **there's a difference in scope between Element [1.h] in**
2 **the '304 patent and Claim 1 of the '484 patent. Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: Again, my -- in forming my
5 opinions here, it's highlighting how Lisogurski and
6 knowledge of a POSITA indeed meets the limitation here of
7 capturing light while the semiconductor sources are off
8 and converting the captured light into a first signal.
9 BY MR. CHRISTOPHER:
10 **Q. So the answer to the prior question is yes.**
11 **Correct?**
12 MR. KIM: Objection, form.
13 THE WITNESS: Can you repeat the question,
14 please?
15 BY MR. CHRISTOPHER:
16 **Q. Your opinion is that Lisogurski meets both**
17 **claims, the '304 and '484, but you haven't formed any**
18 **opinions on the difference in scope between [1.h] in the**
19 **'304 patent and Claim 1 of the '484 patent. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: In forming my opinions, I didn't
22 need to draw the Venn diagrams of -- of the extent of
23 what is meant by one or the other, but they certainly
24 are using slightly different language, as I say, but they
25 cover -- they substantially -- substantially same

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1 concept, so there's a significant area of overlap in the
2 concept that they're explaining, as I write here in
3 Paragraph 145.
4 Indeed, Lisogurski -- the detector receives and
5 captures ambient light during off periods when the LEDs
6 are off, converts the captured light into a dark signal
7 by measuring the current when the LEDs are off. So
8 Lisogurski certainly teaches Element [1.h].
9 BY MR. CHRISTOPHER:
10 **Q. Can you turn to Paragraph 146 in your**
11 **declaration. Let me know when you're there. This is 85**
12 **of the PDF.**
13 A. Yes, I'm there.
14 **Q. So starting at Paragraph 146, you address**
15 **Element [1.i] in Claim 1 of the '304 patent. Correct?**
16 A. Yes.
17 **Q. And just as a general matter, I notice that the**
18 **language you've quoted in Paragraph 146 has different**
19 **colors.**
20 **Do you see that, the text?**
21 A. Yes.
22 **Q. And then the -- the last clause (as read):**
23 **"The captured light, including at**
24 **least a part of the at least a portion of**
25 **the analysis output beam reflected or**

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1 **transmitted from the sample" is in blue.**
2 **Do you see that?**
3 A. Yes.
4 **Q. Does the blue text indicate that that language**
5 **is new relative to the prior board decisions?**
6 A. So as I point out on Page 63 -- or 66 depending
7 which number you use, but at the bottom of Paragraph --
8 below Paragraph 112 (as read):
9 "For readability, color-coding has
10 been used to clarify the mapping of
11 certain claim language to prior art."
12 **Q. Sure. So does -- in your declaration for the**
13 **'304 patent, what does blue text represent, if anything?**
14 A. Well, for example, the blue in 146, I talk
15 about the captured light, "including at least a part of
16 the at least a portion of the analysis output beam
17 reflected or transmitted from the sample."
18 And then in 148, language that similarly
19 addresses that through the Lisogurski, the blue text in
20 148 (as read):
21 "Capture a portion of the optical
22 beam, red signal, IR signal, reflected
23 from the tissue."
24 So I'm using the color-coding to clarify
25 mappings, as I said, to the prior art.

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1 **Q. So if we look at Paragraph 147 of your**
2 declaration, you see first part of the sentence reads (as
3 read):
4 "This limitation includes language
5 similar to that which was already
6 determined unpatentable by the board in
7 the 484-IPR."
8 Do you see that?
9 A. Yes.
10 **Q. And then you have a parentheses with some --**
11 **some green text and some red text.**
12 **Do you see that?**
13 A. Yes.
14 **Q. And then, about halfway through that sentence,**
15 **you wrote (as read):**
16 **"And new language that was not**
17 **previously considered."**
18 **And in blue text (as read):**
19 **"The captured light, including at**
20 **least a part of the at least a portion of**
21 **the analysis output beam reflected or**
22 **transmitted from the sample."**
23 **Do you see that?**
24 A. Yes.
25 **Q. And so the text in blue, "the captured light**

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1 **including a part of the at least a portion of the**
2 **analysis output beam reflected or transmitted from the**
3 **sample," was not previously considered by the board in**
4 **the 484-IPR. Correct?**
5 A. As I highlight here, yes, that's that language
6 but, the blue, again, is referencing back to the text, my
7 subtitle below -- my footnote below Paragraph 112. It's
8 mapping claim language to prior art. And yes, it happens
9 in this case, as well, to correspond to this not
10 previously considered language.
11 **Q. Turn to Paragraph 212 -- excuse me, I got them**
12 **backwards. 221, please. '304 declaration.**
13 A. 221 you said?
14 **Q. 221.**
15 A. Okay.
16 **Q. You there?**
17 A. Yes.
18 **Q. Okay. Starting at Paragraph 221, you address**
19 **Element [19.b] in Independent Claim 19 of the**
20 **'304 patent. Correct?**
21 A. Yes.
22 **Q. Okay. And I'll note again there's some colored**
23 **text here in Paragraph 221.**
24 **Do you see the purple text, "generate by"**
25 **moduling -- "modulating" -- excuse me?**

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1 A. Yes.
2 **Q. And if you scroll down to Paragraph 224. Let**
3 **me know when you're there.**
4 A. Yes.
5 **Q. Okay. Paragraph 224 you address -- there's**
6 **some text in purple on the first line.**
7 **Do you see that?**
8 A. Yes.
9 **Q. So Paragraph 224 of your declaration is**
10 **addressing the phrase "generate by modulating" in**
11 **Element [19.b] of the '304 patent. Correct?**
12 A. As I highlighted my footnote on Page 63, I've
13 used the color-coding to map claims to prior art, and
14 Lisogurski, in that Paragraph 224, the purple piece, is
15 the multiple LEDs operating in continuous modulation,
16 so -- but Lisogurski discloses (as read):
17 "Multiple LEDs operating in continuous
18 modulation, driven by the light drive
19 signal for the light source's on and off
20 periods to produce outputs of different
21 intensities."
22 **Q. Understood. So in Paragraph 224, you don't**
23 **cite either of your prior declarations for the '533 or**
24 **the '484 patent. Correct?**
25 A. Again, throughout, I'm highlighting Lisogurski

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1 and knowledge of POSITA. Here I'm -- I'm describing how
2 Lisogurski did not use the prior declarations in that
3 Paragraph.
4 **Q. And the phrase in Claim [19.b] "generate by**
5 **modulating" did not appear in any of the claims that were**
6 **subject to the prior '533 and '484 decisions. Correct?**
7 **Are you reviewing the -- the patents?**
8 A. Yes.
9 **Q. Let me -- let me withdraw that and ask it**
10 **perhaps a simpler way. If the prior '484 or '533**
11 **decisions address the language "generate by modulating,"**
12 **would it be fair to assume you would have cited those**
13 **decisions or your declarations here in Paragraph 224?**
14 MR. KIM: Objection, form.
15 THE WITNESS: In general, I pointed back where
16 decisions had previously been opined upon by me in the
17 prior and declarations -- or decisions had been made. I
18 refer to them. May I have made a situation where I
19 didn't do that? Possibly. If it -- in general, I tried
20 to refer to those, but I may not have done it for
21 everything.
22 BY MR. CHRISTOPHER:
23 **Q. All right. If you can please turn to the**
24 **'304 patent itself. This is Exhibit 1001 in**
25 **IPR2025-01254. Let me know when you have it and I'm**

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1 going -- when you do, I'm going to direct your attention
2 to the claims.
3 A. Okay. The '304, you said?
4 Q. Yeah. And I'll start by directing your
5 attention to claim -- Dependent Claim 4. Let me know
6 when you're -- when you're there.
7 A. Okay. The one that reads, "The measurement
8 system of Claim 1"?
9 Q. Yes. So Dependent Claim 4 reads (as read):
10 "The measurement system of Claim 1
11 wherein the receiver comprises a
12 plurality of detectors arranged along a
13 first arc and wherein the plurality of
14 semiconductor sources are arranged along
15 a second arc."
16 Do you see that?
17 A. Yes.
18 Q. And then Dependent Claim 15 of the '304 patent.
19 Let me know when you're there.
20 A. 15, yes.
21 Q. Dependent Claim 15 similarly recites (as read):
22 "A plurality of detectors arranged
23 along a first arc and wherein the
24 plurality of semiconductor sources are
25 arranged along a second arc that is

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1 offset from the first arc."
2 Do you see that?
3 A. Yes.
4 Q. And then, finally, if you can turn to Dependent
5 Claim 21 about the '304 patent, let me know when you're
6 there.
7 A. Yes.
8 Q. Dependent Claim 21 also requires (as read):
9 "A plurality of detectors arranged
10 along a first arc and wherein the
11 plurality of semiconductor sources are
12 arranged along a second arc that is
13 offset from the first arc."
14 Do you see that?
15 A. Yes.
16 Q. And would it be understandable to you if we
17 refer to those limitations in Claims 4, 15, and 21 of the
18 '304 patent as the "arc limitations"?
19 A. Sure.
20 Q. Just trying to come up with some shorthand so
21 we don't have to read it every time.
22 Now, you would agree that none of the claims in
23 the -- that were considered in the prior '533 decision
24 recited detectors or emitters arranged along an arc.
25 Correct?

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1 Just for the record, are you reviewing the
2 claims of the '533 patent?
3 A. I'm reviewing my declaration where I talk about
4 the claims, the arc -- the arc Claims 4, 15, and 21,
5 which is where I combine Lisogurski and LeBoeuf in
6 reviewing what I discuss there.
7 Okay. I've familiarized myself with my -- that
8 section of the declaration. Can you please reask the
9 question?
10 Q. You would agree that none of the claims that
11 were at issue in the '533 decisions recited "detectors or
12 emitters arranged along an arc." Correct?
13 A. Well, as I describe here, I'm highlighting how
14 Lisogurski, in view of LeBoeuf, meets the limitations.
15 I'm not citing back to the '484 or the '533 in those --
16 in my discussion here. I do highlight, in the motivation
17 to combine, for example, that LeBoeuf was substantially
18 similar to a Valencell patent that was considered in the
19 '484.
20 But in my discussion of the -- Claim 4, I
21 describe the -- how Lisogurski, in view of LeBoeuf, teach
22 the -- the first arc and second arc and the motivations
23 to combine or starting back at Paragraph 261 through 267.
24 Q. I appreciate that, but I don't think it
25 answered the question, which is: None of the claims from

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1 the '533 patent that were issued in the prior decision
2 recited the word "arc." Correct.
3 Are you reviewing another document?
4 A. I'm reviewing the -- the '533. You asked about
5 "arc" in '533.
6 So an arc, in forming my opinions here, I was
7 not referencing just '533 by itself. I was just talking
8 about -- or sorry -- Lisogurski by itself, but Lisogurski
9 and LeBoeuf, in the teaching of an arc and the motivation
10 to combine. But LeBoeuf's teaching of an arc arrangement
11 would have been motivated to apply LeBoeuf's teaching to
12 Lisogurski and I'm addressing it in the -- the '304 here.
13 But no, I was not addressing it in the -- the prior '533.
14 Q. So the answer is, yes, none of the claims in
15 the '533 patent recite an arc. Correct?
16 A. Right. My opinions here are for the '304 and
17 how Lisogurski, in combination with LeBoeuf, and
18 knowledge of a POSITA, do teach the arc limitations of
19 the '304.
20 Q. Is there a reason you're not answering the
21 question?
22 The -- none of the claims in the '533 patent
23 recite the word "arc." Correct?
24 A. I agreed with you and then I went on to explain
25 how I did not address it. In the '533, "arc" is not

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1 expressed there. But indeed, Lisogurski, in combination
2 with LeBoeuf, there's a motivation to combine, as I
3 describe. And in -- in combination, meet the arc
4 limitations in '304.
5 **Q. Now, none of the claims in the '484 patent that**
6 **were subject to the prior decision recite an arc.**
7 **Correct?**
8 **Are you reviewing the '484 patent?**
9 A. I am.
10 Again, I was not addressing, in the '48 --
11 prior '484, the '533, issues with the -- associated with
12 arc. But, again, what I do and do highlight here is how
13 Lisogurski and LeBoeuf, for example, that teach the
14 benefit and the reason they combine in -- in the -- and
15 teach concentric arcs, to increase detection of scattered
16 light.
17 **Q. So you agree that neither of your prior**
18 **declarations, the '533 and the '484, relied on the**
19 **LeBoeuf reference. Correct?**
20 **Just to be clear, you're reviewing your**
21 **declarations again to answer this?**
22 A. Well, I'm highlighting, for example, I -- as I
23 already called out, that LeBoeuf is substantially similar
24 with Valencell '093. This is at the Page 136 or 139.
25 And that was considered during the '484. But, you know,

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1 I'm -- in those prior, I was not referencing LeBoeuf.
2 But, indeed, my declaration of the '304
3 incorporates those, plus also explains quite clearly why
4 a POSITA would have been motivated to combine Lisogurski
5 and LeBoeuf and how the combination teaches the -- the
6 arc limitations.
7 **Q. Okay. Well, let's -- let's try the question**
8 **again.**
9 **"Yes" or "no," did your prior declarations for**
10 **the '484 and '533 patents rely upon the LeBoeuf**
11 **reference? "Yes" or "no"?**
12 A. My prior declarations are part of the '304. I
13 did not use LeBoeuf in those prior declarations. I used
14 it in my '304. I explained why a POSITA would have been
15 motivated to combine Lisogurski and LeBoeuf and that how
16 that combination indeed teaches the arc arrangement.
17 **Q. So my question is a "yes" or "no" question.**
18 **Do you understand that?**
19 MR. KIM: Counsel, just to be clear, he's --
20 he's just answered your question.
21 MR. CHRISTOPHER: He -- he's -- Counsel, he
22 didn't answer the questions.
23 MR. KIM: He did. He's providing further
24 context to his -- to his answer, but he's answering your
25 question.

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1 MR. CHRISTOPHER: No, he's not.
2 BY MR. CHRISTOPHER:
3 **Q. Dr. Anthony, just -- we're wasting a lot of**
4 **time here. I'm asking: Simple "yes" or "no," did your**
5 **prior declarations, the '484 and the '533, did they rely**
6 **on the LeBoeuf reference? "Yes" or "no"?**
7 MR. KIM: Objection, form.
8 THE WITNESS: So as I've answered, I
9 incorporated the '4 -- prior '484 and the '533, where I
10 was not talking about an arc or LeBoeuf. But, indeed, I
11 do talk about it in the '304, in combination with
12 Lisogurski with LeBoeuf, how a POSITA would be motivated
13 to combine those and, indeed, teaches the arc
14 limitations.
15 MR. CHRISTOPHER: Okay. I'm going to move to
16 strike as nonresponsive. I think they speak for
17 themselves.
18 BY MR. CHRISTOPHER:
19 **Q. Let's look at Paragraph --**
20 MR. KIM: I disagree on the responsiveness, but
21 we can move on.
22 BY MR. CHRISTOPHER:
23 **Q. Let's turn to Paragraph 276 of your declaration**
24 **from the '304 patent.**
25 **Let me know when you're there.**

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1 A. 276? Yes.
2 **Q. 276. So 276, you refer back to your discussion**
3 **for independent Claim 1.**
4 **Do you see that?**
5 A. Yes.
6 **Q. And then in Paragraph 277, you refer back to**
7 **your discussion for Element [1.d].**
8 **Do you see that?**
9 A. Yes.
10 **Q. And then in Paragraph 278, you write (as read):**
11 **"LeBoeuf discloses a plurality of**
12 **detectors arranged along a first arc."**
13 **And then there's a parenthesis. And then you**
14 **wrote (as read):**
15 "(And wherein the plurality of
16 semiconductor sources are arranged
17 along" --
18 Oh, sorry. It's cut off. Let me withdraw
19 that. I'll reask a clean question. Sorry about that.
20 Let's start over.
21 In Paragraph 278, you wrote (as read):
22 "LeBoeuf discloses a plurality of
23 detectors arranged along a first arc' --
24 there's a parenthesis.
25 And then you wrote, (as read):

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1 "And wherein the plurality of
2 semiconductor sources are arranged along
3 a second arc."
4 Do you see that?
5 A. Yes.
6 **Q. And so I think we covered this, but you're**
7 **relying on LeBoeuf as teaching detectors and emitters in**
8 **an arc. Correct?**
9 A. I'm relying on the combination of Lisogurski
10 and LeBoeuf in the teachings.
11 **Q. And you would agree that Lisogurski by itself**
12 **does not expressly disclose detectors arranged along an**
13 **arc. Correct?**
14 MR. KIM: Objection, form.
15 THE WITNESS: Well, as I describe in, I think,
16 prior answers and also, pointing back to the motivation
17 to combine, LeBoeuf teaches an arc arrangement.
18 Lisogurski teaches a plurality of emitters and detectors,
19 an array. Together, they teach the -- the arc
20 limitations.
21 So I'm not relying in forming my opinions here
22 on Lisogurski by itself, but the combination of
23 Lisogurski and LeBoeuf.
24 BY MR. CHRISTOPHER:
25 **Q. Right. Because Lisogurski doesn't expressly**

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1 **disclose detectors arranged along an arc. Correct?**
2 MR. KIM: Objection, form.
3 THE WITNESS: Again, my opinions are
4 demonstrating how Lisogurski, in combination with
5 LeBoeuf, meet the limitation. I was not relying on just
6 Lisogurski. Lisogurski and LeBoeuf.
7 BY MR. CHRISTOPHER:
8 **Q. Likewise, Lisogurski doesn't expressly disclose**
9 **emitters arranged along an arc. Correct?**
10 MR. KIM: Objection, form.
11 THE WITNESS: Well, as I explained, when
12 talking about Claim 15, for example, in Paragraph 294,
13 Lisogurski and LeBoeuf, together, teach the -- the arc
14 limitation of having both detectors along a first arc and
15 a source that was along a second arc. That was offset
16 from the first.
17 BY MR. CHRISTOPHER:
18 **Q. Lisogurski doesn't expressly disclose emitters**
19 **arranged along an arc. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: In forming my opinions here of
22 obviousness, I pointed to why a POSITA would be motivated
23 to combine Lisogurski and LeBoeuf, solving similar
24 problems, similar area, and how the combination teaches
25 the limitation.

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1 MR. CHRISTOPHER: Move to strike,
2 nonresponsive.
3 BY MR. CHRISTOPHER:
4 **Q. Lisogurski doesn't expressly disclose emitters**
5 **arranged along an arc. Correct?**
6 MR. KIM: Objection, form. Also, disagree on
7 the responsiveness.
8 THE WITNESS: My opinions here are in the
9 context of the combination of Lisogurski and LeBoeuf.
10 BY MR. CHRISTOPHER:
11 **Q. And when you refer to the combination, you're**
12 **relying on a combination because Lisogurski by itself**
13 **doesn't expressly disclose emitters arranged along an**
14 **arc. Correct?**
15 MR. KIM: Same objection.
16 THE WITNESS: When going back to my motivations
17 to combine, I describe why Lisogurski in -- is -- and
18 LeBoeuf are in the same field and why LeBoeuf would
19 solve, working together, pertinent problems, having a
20 circular arc to address -- to absorb more of the light
21 that's scattered through the absorption. And in forming
22 my opinions here, I was not, as you point out, relying
23 just on Lisogurski, but Lisogurski, in combination with
24 LeBoeuf.
25 ///

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1 BY MR. CHRISTOPHER:
2 **Q. I'm going to show you the Zoom chat. What's**
3 **been submitted as Exhibit 1026 in three of the**
4 **proceedings, IPR2025-021 -- let me start over.**
5 **2025-01251, IPR2025-01252, and IPR2025-01254.**
6 **Let me know when you have a copy of Exhibit 1026 open.**
7 (Exhibit 1026 in 2025-01251,
8 IPR2025-01252, and IPR2025-01254 was
9 previously marked.)
10 THE WITNESS: This is the LeBoeuf patent?
11 BY MR. CHRISTOPHER:
12 **Q. Right. My -- and you recognize Exhibit 1026 as**
13 **the LeBoeuf reference?**
14 A. Yes.
15 **Q. Okay. I take it you've reviewed the LeBoeuf**
16 **reference. Correct?**
17 A. Yes.
18 **Q. Did you consider LeBoeuf in its entirety when**
19 **forming your opinions?**
20 A. Well, I considered the combination of
21 Lisogurski and LeBoeuf, the teachings thereof.
22 **Q. Not quite my question.**
23 **Did you read LeBoeuf cover to cover?**
24 A. Yes.
25 **Q. Okay. And did you consider all of its**

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1 teachings, all of LeBoeuf's teachings in forming your
2 opinions?
3 A. I considered LeBoeuf in combination with
4 Lisogurski. So all of the teachings, both.
5 Q. Okay. You considered all of the teachings of
6 both Lisogurski and LeBoeuf. Is that correct?
7 A. I considered what is taught in the combination,
8 the -- what is taught in LeBoeuf, in combination with
9 what's taught in Lisogurski.
10 Q. So you only considered the portions of LeBoeuf
11 that you rely on in the combination with Lisogurski. Is
12 that right?
13 MR. KIM: Objection, form.
14 THE WITNESS: That's not what I said. You
15 asked whether I considered LeBoeuf and Lisogurski, and I
16 said yes, but in combination with Lisogurski.
17 BY MR. CHRISTOPHER:
18 Q. I don't think it was that clear, but okay.
19 Let's turn to Paragraph 273 of your
20 declaration. Let me know when you're there.
21 A. 273, yes.
22 Q. So in the first sentence, you write (as read):
23 "LeBoeuf discloses light-guiding ear
24 bud 30."
25 Do you see that?

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1 A. Yes.
2 Q. And you're referring to an embodiment of
3 LeBoeuf, which is shown in Figures 8A and 8B. Correct?
4 A. 8A, 8B, 8C, yep.
5 Q. So let's turn to Paragraph 278 of your
6 declaration. Let me know when you're there.
7 A. 278?
8 Q. Correct. 278.
9 A. Yep. Okay.
10 Q. And in Paragraph 278, you opine that (as read):
11 "LeBoeuf discloses a plurality of
12 detectors arranged along a first arc."
13 Do you see that?
14 A. Yes.
15 Q. And you've got that in orange text.
16 Do you see that?
17 A. Yes.
18 Q. And then you go on to refer -- this is in green
19 text (as read):
20 "The plurality of semiconductor
21 sources are arranged along a second arc."
22 Do you see that?
23 A. Yes.
24 Q. And then underneath Paragraph 278, you've got
25 an annotated version of Figure 8B from LeBoeuf with some

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1 orange and green annotations.
2 Do you see those?
3 A. Yes.
4 Q. And so the orange -- strike that.
5 You've shown the first arc in LeBoeuf using
6 orange. Correct?
7 A. Yes.
8 Q. And you've shown the second arc, the emitters,
9 in green. Correct?
10 A. Yep.
11 Q. And in Figure 8B, there are four detectors
12 emitters 24. Correct?
13 A. Yes.
14 Q. And there are four detectors 26 shown in 8B.
15 Correct?
16 A. Yes.
17 Q. Now, Figure 8B that we're looking at here in
18 Paragraph 278 of you declaration, that's a
19 cross-sectional view of LeBoeuf's device. Correct?
20 A. It's -- if you look at 8B -- 8B and 8C, it's
21 the front face, if you will, of the -- that would --
22 where the emitters and detectors are exposed. On the
23 surface of the back plane.
24 Q. So --
25 A. So, yes, it's a cross -- it's a cross-section

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1 through that -- that lane of 8 -- what's shown in
2 orthogonal view in 8C.
3 Q. Right. And if you can pull up just your copy
4 of LeBoeuf, because I'd like to ask you some questions
5 about 8A and 8B together, so it probably makes sense to
6 have the reference in front of you.
7 Let me know when you have it.
8 A. Okay. I refer to it on Page 131 of my deck.
9 Q. I'm sorry. Where are you?
10 A. Page 131 or 134 depending which numbering you
11 use.
12 Q. Oh.
13 A. Of my declaration.
14 Q. Sure. You can -- we can use that. I just want
15 to kind of do what we did with Lisogurski and talk a
16 little bit about what's shown in these figures so we get
17 our terminology down.
18 Reference Number 50, for example, in Figure 8A
19 that's pointing to a base. Correct?
20 A. Called a base, yes.
21 Q. And each of the detectors 26 and the
22 emitters 24 are positioned on the base 50. Correct?
23 A. Yes. In that figure.
24 Q. And Reference Number 16 is pointing to an
25 earbud housing. Correct?

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A. 16? Earbud housing.
Q. Right. And you have this actually annotated in Figure 8A. Reference Number 18 is a cover. Correct?
A. 18. A cover. Yep.
Q. And then you see in the middle of Figure 8B and in the middle of Figure 8A, there's a Reference Number 22?
A. Yes.
Q. That's pointing to a speaker. Correct?
A. Speaker 22.
Q. Right. And in Figure 8A, you see the reference number towards the top, 16a?
A. Yes.
Q. And 16a is a light-blocking region. Correct?
A. Well, as described, for example, in Paragraph 124, LeBoeuf -- a bottom portion 16a of the earbud housing 16 includes the light-blocking region that blocks light from passing therethrough.
Q. Right. And so the purpose of the light-blocking region 16a is to prevent the detectors from being saturated by the emitters. Correct?
MR. KIM: Objection, form.
THE WITNESS: Well, as described in Paragraph 124, for example, is the bottom portion 16a of the earbud housing, includes 16, includes a

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light-blocking region that blocks light from passing therethrough. This light-blocking region 16a may be black painted region, an optically opaque region, or a material or a structure that blocks light transmission. The illustrated configuration of earbud housing 16 and bottom portion 16a may help combine inspection -- confine inspection light 111 generated by the optical emitters within the light-guiding layer guiding this light towards the ear region through the end portion of the earbud.
BY MR. CHRISTOPHER:
Q. Are you just reading from Paragraph 124?
A. Correct. You asked about what the role that LeBoeuf was describing around 16a, and so that's a good description of what it's being used for.
Q. Well, I'm reading -- what about the first sentence? (As read):
"In the illustrated embodiment of Figs. 8A through 8B to reduce the risk of the inspection light 111 interrogating and saturating the optical detectors. The bottom portion of 16a of the earbud housing includes a light-blocking region."
Do you see that?
A. Yes.

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Q. So -- so I'm sorry. I didn't mean to cut you off. Did you have more to say?
A. Go ahead.
Q. So you agree the purpose of the bottom portion 16a is -- at least one purpose is to prevent the emitters from saturating the detectors. Correct?
A. Well, again, I was not opining on a particular embodiment that is of LeBoeuf by itself, but does anything in particular other than what's described here. I mean, I can -- LeBoeuf describes what it's being used for in this particular embodiment, to reduce the risk of inspection light interrogating and saturating the optical detectors. So yes.
Q. What do you mean you were not opining on a particular embodiment of LeBoeuf?
A. My arguments are the combination of the teachings of Lisogurski and LeBoeuf, and I point to a particular embodiment here, but it's in combination that I'm considering the teachings, not LeBoeuf by itself.
Q. And if we go back to Figures 8A and 8B of LeBoeuf, specifically 8B, the cross-sectional view, we see that the earbud housing 16 has a circular shape. Correct?
A. Yes.
Q. And, likewise, the cover 18 is shown as having

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a circular shape in 8B. Correct?
A. I'm sorry. Repeat that?
Q. Sure. In Figure 8B the housing -- strike that. In Figure 8B, the cover 18 is shown as having a circular shape. Correct?
A. 18 has a circular shape, yes.
Q. And then if we look at Figure 8A, based on the circular shape we see in Figure 8B, the cover 18 is cylindrical. Correct?
A. It's got a cylindrical tendency to it, yeah.
Q. Sure. And, likewise, the earbud housing 16, that would also have a generally cylindrical shape. Correct?
A. Yes. Just to -- when we get a chance, finish this line of, it'd be great to get just a quick bio break.
MR. CHRISTOPHER: Sure. Why don't we go off the record right now.
(Recess.)
MR. CHRISTOPHER: All right. Back on the record.
BY MR. CHRISTOPHER:
Q. Welcome back.
Did you discuss your testimony with anyone during our break?

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1 A. No.
2 **Q. Okay. Before our short break, we were talking**
3 **about Figures 8A and 8B of LeBoeuf.**
4 **Would you agree that the shape of the cover 18**
5 **in LeBoeuf is configured such that the device can be**
6 **placed within a person's ear?**
7 A. Eight is configured to be an earbud, yes.
8 **Q. And so the cylindrical -- well, generally**
9 **cylindrical shape of the cover 18 is dictated by the fact**
10 **that this is an earbud. Right?**
11 A. This particular embodiment in LeBoeuf is an
12 earbud and so would be configured to fit into an ear.
13 **Q. Okay. And let's look at Figure 8A**
14 **specifically. The light emitted by the emitters 24 is**
15 **shown as a dashed line labeled 111.**
16 **Do you see that?**
17 A. Yes.
18 **Q. And in the embodiment shown in Figure 8A, the**
19 **light 111 that is emitted from the emitters 24 can pass**
20 **through the earbud housing 16. Correct?**
21 A. What's shown there it seems to be dotted lines
22 going through the thing labeled 16. Yes.
23 **Q. And light from the emitters 24 exits the device**
24 **through the end portion that is labeled 18f. Correct?**
25 A. 18f at the end portion. And then also I

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1 highlight in 8C -- for example, 8C is a little bit
2 different because 8C has the -- 16 maybe at least
3 partially reflective of the scattered light within the
4 cavity defined by the earbud housing. So to compare 8A
5 and 8C, in one situation the light is going through and
6 the other one is not.
7 **Q. And we'll talk about 8C in a minute or two.**
8 **Just focusing on Figures 8A and 8B. The**
9 **detectors receive light that's reflected back from a**
10 **person's tissue. Correct?**
11 A. Well, detector receives whatever light is
12 incident upon that, and so there may be light coming from
13 the tissue. There may be light coming from other --
14 other surfaces. So, for example, you know we use the
15 cladding material, for example, that light comes from the
16 material -- or from the human back to the cladding, to
17 then bounce -- be focused in to the detectors, so it's
18 not directly and -- but yes, whatever light is upon it,
19 it'll generate electrons from those photons.
20 **Q. Understood. So in Figure 8A, the cover 18**
21 **collects light and delivers it to the optical**
22 **detectors 26. Correct?**
23 MR. KIM: Objection, form.
24 THE WITNESS: Can you repeat the question,
25 please?

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1 BY MR. CHRISTOPHER:
2 **Q. Yeah. So in LeBoeuf, the embodiment shown in**
3 **Figure 8A, the cover 18 specifically was spaced between**
4 **the cover 18 and the earbud housing 16 that acts as a**
5 **light guide that directs light to the detectors 26.**
6 **Correct?**
7 MR. KIM: Same objection.
8 THE WITNESS: Well, as described, for example,
9 in Paragraph 123, cover 18 -- 123 of LeBoeuf -- (as
10 read):
11 "The cover 18 includes at least one
12 aperture through which staff and speaker.
13 The cover 18 includes a cladding material
14 21 on the outer surface 18a, except that
15 the end portion in the illustrative -- in
16 the embodiment, there's no cladding
17 material on the cover intersurface 18b.
18 The housing 16b is in contact with the
19 cover surface as a cladding layer to
20 define the light-guiding region 19. The
21 cover 18 with the illustrative cladding
22 material says to the light guide that
23 delivers light from the optical emitters
24 24 into an ear canal, the subject through
25 the end portion 18f. Cover 18 also

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1 collects light from the end portion 18f.
2 Delivers a collective light to the
3 optical detectors 26" --
4 THE COURT REPORTER: And I'm sorry. Wait one
5 second. You're reading too fast, so let's go back --
6 THE WITNESS: My apologies.
7 THE COURT REPORTER: Thank you. No problem.
8 Let's go back to "optical emitters through the
9 end portion 18f."
10 THE WITNESS: Well, I'm not sure where I'm
11 exactly going back to, but I'll start back far enough (as
12 read):
13 "The cover 18 with the illustrative
14 cladding material 18c serves as a light
15 guide that delivers light from the
16 optical emitters 24 into the ear canal
17 with subject through cover end portion
18 18f. Cover 18 also collects light
19 through end portion 18f, delivers a
20 collective light through the detectors
21 26. Variation configurations and
22 arrangements of optical emitters and
23 detectors may be utilized in accordance
24 with embodiment of the present
25 invention."

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1 So what's described there is a mechanism to use
2 the housing and cladding material to direct light.
3 And, again, as I point out, the teachings of
4 Lisogurski and LeBoeuf in combination include the use of
5 that cladding material in order to direct light to a
6 detector.
7 BY MR. CHRISTOPHER:
8 **Q. LeBoeuf also discloses that a lens can be used**
9 **to focus light onto the detector. Correct?**
10 **If you're looking for somewhere in LeBoeuf, I**
11 **would -- I would direct you to Paragraph 97 of LeBoeuf,**
12 **where LeBoeuf teaches, (as read):**
13 **"In some embodiments, the light**
14 **transmissive material in the light**
15 **guiding region 19 may include a lens**
16 (e.g., lens 18L illustrated in 6,
17 Figure 6). The lens 18L is an optical
18 communication with the optical emitter 24
19 and/or the optical detectors 26. For
20 example, a lens 18L may be configured to
21 focus light emitted by the optical
22 emitter 24 onto one or more portions of
23 an ear, and/or to focus collected light
24 on the light detectors 26."
25 Do you see that?

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1 A. Yes.
2 **Q. And so LeBoeuf teaches that one option to**
3 **direct light onto the detectors is to use a lens.**
4 **Correct?**
5 A. And, also, teaches -- yes. And, also, teaches
6 a cladding material can be used as well and...
7 **Q. Sure. So you mentioned Figure 8C a couple of**
8 **times.**
9 **Figure 8C is a different embodiment relative to**
10 **Figures 8A and 8B. Correct?**
11 A. So in Paragraph 125, in some embodiments, for
12 example, as illustrated in Figure 8C, the earbud housing
13 may be at least -- 16, may be at least partially
14 reflective to scatter light within the cavity, defined by
15 the earbud housing 16.
16 In such case, the optical energy may exit the
17 earbud through apertures 34A and B in the housing 16, and
18 cover 18. An advantage of this configuration is that
19 light can be focused on a particular region of the ear or
20 a particular physiological activity may be located.
21 This configuration may reduce unwanted optical
22 signals from regions that may not be relevant to the
23 physiological activity of interest. 8C shows
24 apertures 34 A and B positioned towards the tympanic
25 membrane. The apertures may be located at one or other

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1 locations along the earbud, et cetera.
2 So it's slightly different embodiment, yes.
3 **Q. Different embodiment. Correct?**
4 A. As I said, it's a slightly different embodiment
5 that has the earbud housing 16 being partially reflective
6 to the scatter.
7 As you pointed out, when comparing 8A with the
8 dotted lines of the light going through 16 versus 8C,
9 where they are not.
10 **Q. Okay. And if we look at Figure 8C, we see in**
11 **this side view two detectors 26. Correct?**
12 A. In 8C?
13 **Q. Yes.**
14 A. Yeah. We see two detectors, yes.
15 **Q. And -- and you also see, within earbud**
16 **housing 16, there are two emitters 24. Correct?**
17 A. Yes, in that cross-sectional view.
18 **Q. Yeah. And then, you know, one difference**
19 **relative to the -- the prior embodiment in Figures 8A and**
20 **B is that the earbud housing is reflective such that**
21 **light from the emitters 24 does not pass through the**
22 **earbud housing 16. Correct?**
23 A. As I just read in the -- there, 16 is described
24 as being, at least partially reflective, scatter light
25 within the cavity.

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1 **Q. Okay.**
2 A. Similar -- serving a similar role to the
3 cladding material on the outer side to keep light in a
4 particular region.
5 **Q. Now, can you turn to Figures 9A and 9B of**
6 **LeBoeuf. This is on Page 11 of the PDF, if you're**
7 **looking at the electronic version.**
8 A. Yep.
9 **Q. Okay. Did you consider the embodiment shown in**
10 **9A and 9B in forming your opinions?**
11 A. So LeBoeuf teaches multiple embodiments and the
12 embodiment that I used in my declaration is the
13 embodiments of -- of 8.
14 **Q. But did you consider what's shown in Figures 9A**
15 **and 9B when you formed your opinions?**
16 A. I considered the teachings of LeBoeuf and --
17 and Lisogurski together.
18 **Q. Sure. So in Figure 9B, let's start there,**
19 **there are four emitters 24. Correct?**
20 A. I'm sorry. What was the question about
21 Figure 9?
22 **Q. Figure 9B, are you there?**
23 A. Yes.
24 **Q. There's four emitters 24. Correct?**
25 A. Twenty-four are the emitters, yes.

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1 **Q. And then in Figure 9A, we see one detector 26**
2 **at the bottom.**
3 **Do you see that?**
4 A. Yes.
5 **Q. Now, if you could turn to Paragraph 128 of**
6 **LeBoeuf.**
7 A. Okay.
8 **Q. Now, roughly halfway down on that -- on that**
9 **Paragraph that you see on the -- in the page, where 128**
10 **starts, you see where it reads (as read):**
11 **"When inspection light 111 generated**
12 **by the optical emitters 24 is scattered**
13 **or by an optical scatter region, this**
14 **light may form a more diffuse optical**
15 **beam 111A that is more uniform across the**
16 **earbud 30 than the inspection light 111**
17 **generated by the optical emitters 24."**
18 **Do you see that?**
19 A. Yes.
20 **Q. And according to Lisogurski, the optical 111A**
21 **is more uniform than the inspection light 111. Correct?**
22 A. I'm sorry. You said Lisogurski or LeBoeuf?
23 **Q. I may have said Lisogurski. If I did, I meant**
24 **LeBoeuf.**
25 A. Okay. Just, can you read it -- what's the

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1 question?
2 **Q. Yeah, let's try it again.**
3 **LeBoeuf teaches that the optical beam 111A is**
4 **more uniform in Figures 9A and 9B than the inspection**
5 **light 111, for example, in Figures 8A and 8B. Correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, I'm not sure -- it's not
8 necessarily comparing. It's describing that embodiment
9 of 9A and 9B is more uniform across the earbud than
10 inspection light generated by the optical emitters 24.
11 It's not saying in comparison to anything other than
12 itself.
13 BY MR. CHRISTOPHER:
14 **Q. Would you agree that the optical beam 111A**
15 **that's shown in Figure 9A is more uniform than the**
16 **inspection light 111 that exits the device in Figure 8A?**
17 MR. KIM: Objection, form.
18 THE WITNESS: I wasn't opining upon the
19 comparison of 9A and 9B and 8A. I'm considering the
20 teachings of -- and I'm not wholesale copying one
21 embodiment or the other. But I'm highlighting the
22 teachings of Lisogurski in view of LeBoeuf. And the
23 teachings of a concentric arc, the teachings of the --
24 the cladding material, the reflective surface.
25 Yeah. In forming my opinions, I didn't need to

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1 opine around what is 9 doing versus 8 in LeBoeuf by
2 itself.
3 BY MR. CHRISTOPHER:
4 **Q. So you don't have any opinions as to whether**
5 **the optical beam 111A in Figure 9A is more uniform than**
6 **the inspection light 111 exiting the device in Figure 8A.**
7 **Correct?**
8 MR. KIM: Objection, form.
9 THE WITNESS: I didn't need to opine -- opine
10 upon such a comparison in forming my opinions. What
11 LeBoeuf teaches in combination with Lisogurski is, as I
12 described, meets the limitations.
13 BY MR. CHRISTOPHER:
14 **Q. Does Lisogurski teach that the measurements**
15 **that could be obtained from the embodiment in Figures 8A**
16 **and 8B are more accurate than any of the other**
17 **embodiments disclosed in LeBoeuf -- let me start over,**
18 **because I think I said Lisogurski. Withdrawn.**
19 **Does LeBoeuf teach that the embodiment shown in**
20 **Figures 8A and 8B result in more accurate measurements**
21 **relative -- relative to any other embodiment disclosed in**
22 **LeBoeuf?**
23 MR. KIM: Objection, form.
24 THE WITNESS: Can you repeat the question,
25 please?

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1 MR. CHRISTOPHER: Sure.
2 BY MR. CHRISTOPHER:
3 **Q. Does LeBoeuf teach that the embodiment shown in**
4 **Figures 8A and 8B results in more accurate measurements**
5 **relative to any other embodiments disclosed in LeBoeuf?**
6 MR. KIM: Same objection.
7 THE WITNESS: So, again, I'm just prefacing, I
8 was not opining upon LeBoeuf by itself. I was opining
9 upon what LeBoeuf teaches in combination with Lisogurski.
10 And LeBoeuf, and POSITA, if they -- opining for a moment
11 just on how a POSITA would interpret LeBoeuf in
12 isolation, which is not what I was doing, LeBoeuf is
13 teaching various design embodiments that would have
14 different manufacturing considerations, sensitivity
15 considerations, and is silent, necessarily, on comparing
16 what exactly is the right combination.
17 Because its answer is, POSITA reading it in
18 isolation, which is not what I was doing, would know that
19 there are design trade-offs that would lead to different
20 performance. And it could be uniformity, it could be
21 sensitivity, it could be cost.
22 BY MR. CHRISTOPHER:
23 **Q. So LeBoeuf is silent as to the relative**
24 **performance of the various embodiments. Correct?**
25 MR. KIM: Objection, form.

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1 THE WITNESS: Again, I wasn't opining about
2 LeBoeuf by itself. It's talking about the various --
3 the -- the teachings of LeBoeuf are demonstrated in
4 various -- in various embodiments. And what I was
5 opining on is the teachings of LeBoeuf, in combination
6 with Lisogurski, Lisogurski, in combination with LeBoeuf,
7 and what a POSITA would understand was taught, including
8 the concentric circles, the -- and using of reflective
9 surfaces in the combination.
10 BY MR. CHRISTOPHER:
11 **Q. You haven't opined in your declaration that,**
12 **for example, the embodiment shown in Figures 8A and 8B of**
13 **LeBoeuf, would result in more accurate measurements**
14 **relative to any other embodiment in LeBoeuf. Correct?**
15 MR. KIM: Objection, form.
16 THE WITNESS: Again, in forming my opinions,
17 that was not necessary to do so. I took the -- the
18 teachings of LeBoeuf as a POSITA would understand them,
19 in view of Lisogurski, and opined on how the combination
20 teaches limitations, both the arc limitations and
21 reflective surface limitations.
22 It wasn't necessary to opine upon the
23 performance characteristics of the different embodiments.
24 Again, highlighting that if a POSITA were to do that, or
25 if I were to do that, there's multiple axis along which

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1 that include cost, manufacturability, performance,
2 battery life, comfort, customer preferences.
3 And so -- but LeBoeuf is highlighting the
4 various embodiments that, in view of the teachings. But,
5 again, I was not opining upon LeBoeuf by itself.
6 BY MR. CHRISTOPHER:
7 **Q. Fair enough. Let's look at, now, Figures 22A**
8 **and 22B of LeBoeuf. Let me know when you're there.**
9 A. Yes.
10 **Q. All right. Did you review these Figures 22A**
11 **and 22B in the course of forming your opinions?**
12 A. I reviewed and -- and considered the teachings
13 of Lisogurski in combination with LeBoeuf and these are
14 example embodiments.
15 **Q. Sure. And so the embodiments shown in**
16 **Figures 22A and 22B is designed to be placed on a finger.**
17 **Correct?**
18 A. That appears to be the case, yes. There's a
19 finger schematic there.
20 **Q. Understood. And if we look at Figure 22B, you**
21 **can see there's an emitter 24.**
22 **Do you see that?**
23 A. Yes.
24 **Q. And then we have a optical detector 26.**
25 **Correct?**

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1 **Do you see that?**
2 A. I -- without looking the numbers up, I'm going
3 to trust you that is indeed the emitter and detector and
4 not the other way around, but yes.
5 **Q. Sure. I'm not trying to trick you. And I'll**
6 **represent to you 26 prime -- you might be wondering what**
7 **that is -- that in the specification is optical noise**
8 **detector.**
9 **You with me?**
10 A. Sure.
11 **Q. So we only see one emitter in Figure 22B.**
12 **Correct?**
13 A. Well, there's a cross-sectional view, so, you
14 know, this figure is silent on whether or not there's
15 others in the depth of the -- in the page.
16 **Q. So just looking at these figures by themselves,**
17 **you would agree that they don't show emitters or**
18 **detectors arranged along an arc. Correct?**
19 A. Well, as I highlight in my discussion,
20 motivation to combine and certainly in the teachings of
21 8A and 8B, LeBoeuf does teach arrangements in an arc. It
22 doesn't teach that every embodiment has to use an arc,
23 but it certainly teaches the use of an arc and the
24 benefits of doing so.
25 And, you know, POSITA reading Lisogurski in

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1 view of LeBoeuf would understand that the combination
2 disclosed both the arc arrangement and the reflective
3 surface uses.
4 **Q. Wasn't quite my question so I'll ask it this**
5 **way: The only embodiment in LeBoeuf that illustrates**
6 **emitters and detectors arranged along an arc is the**
7 **earbud embodiment. Correct?**
8 MR. KIM: Objection, form.
9 THE WITNESS: Well, I mean, certainly LeBoeuf
10 teaches things arranged along an arc, as I highlight in
11 8A. It's silent, for example, on the Figure 22b. And
12 again, you know, LeBoeuf teaches both an arc arrangement
13 and reflective surface arrangement, and POSITA -- also in
14 view of whether also a POSITA would know in terms of like
15 Mendelson, you know, there's very good POSITA knowledge,
16 and the combination of Lisogurski and LeBoeuf is to the
17 benefit array along an arc, and the combination to --
18 teaches the limitation.
19 BY MR. CHRISTOPHER:
20 **Q. Well, would you at least agree with me that the**
21 **only embodiment you've relied on from LeBoeuf that is**
22 **showing an arc would be the one shown in Figures 8A and**
23 **8B. Correct?**
24 A. Well, it's my understanding that a patent can
25 teach the -- the -- have the various embodiments. They

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1 use the teachings in a number of different ways, and in
2 Lisogurski, one of the teachings is certainly of an arc
3 that is taught in 8A and 8B and 8C. It's certainly
4 taught by Lisogurski -- sorry -- LeBoeuf -- Lisogurski in
5 combination with LeBoeuf. But further knowledge of a
6 POSITA, for example, with Mendelson would know to arrange
7 things in an arc.
8 **Q. You said Figure 8C of LeBoeuf discloses an arc?**
9 A. Well, 8C is a cross-section of an arc
10 arrangement, as well, of 8A and 8B.
11 **Q. How do you know that?**
12 A. Well, certainly 8B is teaching it, and 8B is a
13 cross-section of 8A, 8C. The presumptive difference
14 between 8A and 8C in isolation is the additional
15 reflective scattering material 16. But clearly, even if
16 you were to look at 8B by itself, LeBoeuf clearly teaches
17 it, but again, as I describe, combination of LeBoeuf and
18 with Lisogurski and further view of Mendelson, but also
19 has a similar arrangement of photodetectors arranged
20 about the center. The combination and further
21 corroborated as I describe and the motivation to combine,
22 LeBoeuf teaches it, combination teaches it, and a POSITA
23 would understand that it meets the limitations.
24 **Q. Turn to Paragraph 262 of your declaration to**
25 **the '304 patent.**

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1 A. 262?
2 **Q. 262.**
3 A. I'm there.
4 **Q. In the first sentence, you wrote (as read):**
5 **"With respect to LeBoeuf's teaching of**
6 **an arc arrangement, a person of ordinary**
7 **skill in the art would have been**
8 **motivated to apply LeBoeuf's teachings to**
9 **Lisogurski's sensor to include a**
10 **plurality of optical emitters and**
11 **detectors arranged along an offset**
12 **concentric arcs to increase detection of**
13 **scattered light, thus improving accuracy**
14 **of physiological measurements."**
15 **Do you see that?**
16 A. Yes.
17 **Q. And you don't cite LeBoeuf in that first**
18 **sentence. Correct?**
19 A. Well, I go both Lisogurski and LeBoeuf,
20 disclose monitoring devices and highlight Lisogurski and
21 LeBoeuf in their sections there.
22 **Q. Right. You got ahead of me. I was going to go**
23 **to that second sentence next. But in the first sentence**
24 **you don't cite LeBoeuf. Correct?**
25 A. I don't have a cite after the end of that first

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1 sentence.
2 **Q. And then --**
3 A. But I highlighted the figures -- I'm
4 highlighting and showing the figures over there in
5 overview of LeBoeuf, which talks about the arrangement of
6 the optical emitters and detectors back in Paragraph 216.
7 **Q. And in the second sentence you say -- at the**
8 **end, there's two citations of Lisogurski, and then you**
9 **cite LeBoeuf Paragraph 6 and 10.**
10 **Do you see that?**
11 A. Yes.
12 **Q. Okay. Let's look at Paragraph 6 of LeBoeuf.**
13 **Let me know when you've got Paragraph 6 in**
14 **front of you.**
15 A. Okay.
16 **Q. Paragraph 6 of LeBoeuf does not disclose the**
17 **arranging emitters and detectors along offset concentric**
18 **arcs increases detection of scattered light. Correct?**
19 A. Well, I -- I talk about the motivation here.
20 We're looking at one particular Paragraph. And then I'm
21 highlighting both in the overview of LeBoeuf in 260,
22 the -- pointing to the figures and what they describe,
23 pointing to in 262 the configuration of light source and
24 detector made -- any configuration of Lisogurski teaching
25 may be used, and further in 263 describing the --

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1 well-known in the art that light is scattered and
2 absorbed, and then further highlighting Mendelson to --
3 and the arrangement of Mendelson similarly photodetectors
4 arranged in an arc about a center.
5 So I'm highlighting all of this together how
6 LeBoeuf in -- Lisogurski in view of LeBoeuf, further
7 supported by other references, teach the benefit of using
8 an arc or improving single capture.
9 **Q. I'm going to move to strike as nonresponsive.**
10 **The text of Lisogurski -- strike that.**
11 **The text of LeBoeuf does not disclose that**
12 **arrangements emitters and detectors increases the**
13 **detection of scattered light. Correct?**
14 MR. KIM: Objection, form. And also disagree
15 on the responsiveness.
16 BY MR. CHRISTOPHER:
17 **Q. Are you reviewing LeBoeuf?**
18 A. I'm looking at LeBoeuf.
19 Okay. I mean, LeBoeuf by itself again teaches
20 of using emitters and detectors, and the detectors -- a
21 POSITA reading LeBoeuf by itself, which is not what I was
22 doing, understand multiple detectors, more signal,
23 improving your signal to noise. Scattered light may be
24 captured by the optical detectors. So it's teaching the
25 optical detectors, and it also teaches the benefit of

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1 having multiple openings; getting more light in, light
2 out. Detecting one or more optical wavelengths.
3 Detector providing suitable noise reference.
4 So it's talking extensively about the multiple
5 detectors at different locations, the benefit of getting
6 your -- getting an op- -- getting a signal. But again, I
7 was not opining on LeBoeuf by itself. LeBoeuf certainly
8 in the figures and in the -- the text highlight some --
9 show emitters and detectors arranged about an arc.
10 And what I opined about is a combination of
11 Lisogurski and LeBoeuf further bolstered by other
12 literature such as Mendelson, and a POSITA would be
13 familiar with that as well. So POSITA reading these two
14 and the knowledge of a POSITA would understand the --
15 what is disclosed in terms of the benefit of using an
16 array as is disclosed.
17 **Q. So focusing just on LeBoeuf by itself, you**
18 **agree the text does not explicitly say that arranging the**
19 **emitters and detectors in an arc increases the detection**
20 **of scattered light. Correct?**
21 MR. KIM: Objection, form.
22 THE WITNESS: Well, POSITA, again, if they --
23 you know, I was not opining upon LeBoeuf by itself. But
24 LeBoeuf talks extensively about capturing scattered
25 light, you know, having cladding surfaces, reflective

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1 surfaces that guide light. And again, I was not opining
2 upon LeBoeuf by itself. It certainly teaches multiple
3 detectors arranged in an array. Talks about the issues
4 of getting good signal, directing light to the -- to the
5 detectors.
6 And then, as I described, you know, why a
7 POSITA reading Lisogurski and LeBoeuf in combination
8 would understand what is being taught, it would recognize
9 in Paragraph 263 a arranged set of detectors would be --
10 linear would be insufficient to capture the scattered
11 life. Mendelson, for example, further teaches the
12 benefit of having things about an arc, about a center.
13 Person of ordinary skill would have recognized LeBoeuf's
14 detector arrangement enhances the light from the
15 biological tissue detected, improving the signal to
16 noise, resulting increase of the noise ratio. And,
17 accordingly, a person of ordinary skill would have been
18 motivated to modify Lisogurski with LeBoeuf teaching as
19 in the figures he arranged spatially separate detectors
20 and light sources on one or more arcs.
21 MR. CHRISTOPHER: Move to strike --
22 THE WITNESS: With a reasonable chance of
23 success.
24 MR. CHRISTOPHER: Sorry. Move to strike as
25 nonresponsive.

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1 Can you point me to any text in the LeBoeuf
2 reference that explicitly says that arranging the
3 emitters and the detectors in an arc would increase the
4 detection of scattered light.
5 Is there anywhere where it says that in the
6 text of LeBoeuf?
7 MR. KIM: Objection, form.
8 THE WITNESS: A patent -- the teachings of the
9 patent are embodied both in the text and the figures, and
10 I was not opining LeBoeuf by itself. LeBoeuf is not
11 calling out explicitly by itself in isolation, which is
12 not what I did, that a -- the signal-to-noise impact of
13 an arc arrangement, but a POSITA reading Lisogurski, in
14 view of LeBoeuf, in view of their POSITA knowledge, also
15 represented Mendelson would understand what the
16 combination is teaching and would be motivated to combine
17 accordingly.
18 BY MR. CHRISTOPHER:
19 **Q. LeBoeuf by itself is not calling out the**
20 **signal-to-noise impact of arc arrangements. Correct?**
21 MR. KIM: Objection, form.
22 THE WITNESS: Again, I was not opining about
23 LeBoeuf by itself. POSITA reading Lisogurski in view of
24 LeBoeuf and in view of the knowledge of a POSITA, the --
25 the figure calls out an array and calls out the

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1 importance of a circular -- an arc arrangement and called
2 out the benefit of good signal to noise, so a POSITA
3 reading LeBoeuf but in combination with Lisogurski would
4 absolutely understand what is being taught even if
5 LeBoeuf by itself is not explicitly writing out in the
6 text the use of a arc arrangement.
7 BY MR. CHRISTOPHER:
8 **Q. Okay. If you could turn to Paragraph 263 of**
9 **your declaration for the '304 patent.**
10 A. 263?
11 **Q. Yeah. And I want to ask you about -- it's the**
12 **last sentence that bridges onto the next page.**
13 **You see where you wrote (as read):**
14 **"Accordingly, a person of ordinary**
15 **skill in the art would have also**
16 **recognized that a linear or closely**
17 **grouped arrangement of detectors would be**
18 **insufficient to capture much of the**
19 **angularly scattered light."**
20 **Do you see that?**
21 A. Yes.
22 **Q. What do you mean by a "linearly grouped**
23 **arrangement of detectors?" I think I may have misquoted.**
24 **Let me reask this: What do you mean by a**
25 **"linear-grouped arrangement of detectors"?**

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A. So I reference there U.S. Patent 6,801,799 simply put that into -- that's Exhibit 1045?

Q. Yeah. Let's talk about Exhibit 1045. This is the Mendelson reference. I'm going to put it into the Zoom chat.

And this was marked as Exhibit 1045, I believe, only in IPR2025-01251.

Do you recognize Exhibit 1045 as Mendelson?

A. Yes.

Q. All right. And let's just -- just turn back to your declaration for a moment, Paragraph 263. You cite Mendelson at Column 4, Lines 14 through 65.

Do you see that?

A. Yes.

Q. All right. And if you could turn back to Mendelson, Column 4, you see starting around, looks like around Line 6, Mendelson states (as read):

"The total amount of back scattered light that can be detected by a reflecting sensor is directly proportional to the number of photodetectors placed around the LEDs."

Do you see that?

A. Yes.

Q. And so here Mendelson is teaching that you

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could increase the amount of back scattered lights that's detected simply by increasing the number of photodetectors. Correct?

A. Placed around the LED.

Q. Sure. So if a person of skill in the art wanted to increase the amount of back scattered light that reaches the sensor, one option for the person of skill in the art would be to increase the number of photodetectors. Correct?

MR. KIM: Objection, form.

THE WITNESS: Well, I'll opine here today, I mean, a POSITA would increase the number of detectors where the light is to be expected and the light to be expected around a photo detect -- for a source is going to be, roughly, in the round region around it, further modified by any kind of structures that guide a light to earbuds.

BY MR. CHRISTOPHER:

Q. Okay. And then if you can turn, in Mendelson, Column 4, it looks like starting around Line 13 or 14, it's one of those with the numbers in between the lines, you see there the sentence reads (as read):

"Another approach"?

A. Yes.

Q. Then it cites two provocations. There's one,

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4, and it appears to be a 1988 publication by Mendelson.

Do you see that?

A. Yes.

Q. Did you review a copy of that publication in the course of forming your opinions?

A. I believe I've reviewed that document in the past. I don't recall the last time I reviewed it. But, you know, I'm highlighting this -- the '799 Mendelson patent, which is also pointing to these other applications.

Q. Did you review that 1988 publication in connection with your declaration for this matter?

A. Over the last -- in preparation for the declaration -- of the deposition, no. I don't recall whether I reviewed that as part of the forming of my declaration.

Q. Okay. And then you see 5, underneath, and it's another Mendelson publication that appears to be from 1991.

Do you see that?

A. Yes.

Q. Same -- same question. Did you review a copy of the 1991 Mendelson publication in the course of preparing your declaration?

A. I don't remember. I can look, though, if I

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cited that. But it certainly referenced in the Mendelson -- the '799 patent.

Q. So if you look up a couple of lines, Mendelson says (as read):

"Another approach is based on the use of a sensor having 6-footer diodes arranged symmetrically around the LEDs. It is disclose" --

A. Wait. Which -- which line were you reading? Sorry.

Q. It's like so line -- it's one of those where it's in between. So it's either Line 13 or 14. "Another approach."

Do you see that sentence?

A. Yes. Yes.

Q. All right. It says (as read):

"Another approach is based on the use of a sensor having 6-footer diodes arranged symmetrically around the LEDs."

Do you see that?

A. Yes.

Q. And so Mendelson doesn't show us a picture of what that arrangement looks like. Correct?

A. Well, Mendelson, in Figure, shows, you know, around a center. And also, on the cover page, 16 -- or

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1 cover page of Mendelson, shows arrangements of detectors
2 about the center.
3 **Q. Right. But in the passage we just read in**
4 **Column 4, they're referring to the 1988 and 1991**
5 **publications. Correct?**
6 A. Yes.
7 **Q. And we don't have a picture in Mendelson of**
8 **what those two publications look like. Correct?**
9 A. I'd be surprised if they were too dissimilar
10 from what is shown in Figure 7 and the cover page, but we
11 are -- we don't have figures from exactly those
12 publications.
13 **Q. And then if you go down -- and sticking in**
14 **Column 4, to Line 23, Mendelson writes (as read):**
15 **"Yet another prototype reflective**
16 **sensor is based on eight dual wavelength**
17 **LEDs in a single photo diode."**
18 **Do you see that?**
19 A. Yes.
20 **Q. And if this sensor only has a single photo**
21 **diode, you'd agree that the sensor cannot have a**
22 **plurality of detectors arranged along an arc. Correct?**
23 MR. KIM: Objection, form.
24 THE WITNESS: Well, it's based on 90-degree
25 intervals. That's the arc around a circle -- around a

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1 circle. So it's a -- it's -- or you can draw an arc
2 through those four equally radially distant
3 photodetectors. So it's the arc of a circle.
4 BY MR. CHRISTOPHER:
5 **Q. Well, but as we just read in Line 24, it says**
6 **that there's a single photo diode.**
7 **Do you see that?**
8 A. Line 20 -- I'm sorry. I'm at --
9 **Q. I believe it's Line 24. Do you see where it**
10 **says "a single photo diode"?**
11 A. Line 24.
12 **Q. And I'm going to double-check I'm not giving**
13 **you the wrong number.**
14 A. Six discrete photo diodes.
15 **Q. No. I'm looking at the wrong number. It's**
16 **Line 36? Sorry. Something in my eyeline. Let's start**
17 **over.**
18 **In Line 36, in Column 4, do you see where**
19 **Mendelson states (as read):**
20 **"Yet another prototype reflecting**
21 **sensor is based on eight" -- "eight dual**
22 **wavelength LEDs in a single photo diode."**
23 **Do you see that?**
24 A. Yes.
25 **Q. And so in this example, because there's only a**

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1 **single photo diode, there wouldn't be a plurality, two or**
2 **more detectors, arranged along the arc. Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: Well, here, in this particular
5 embodiment, the emitters are arranged about the arc. And
6 the other arrangement is the detectors who are arranged
7 around the arc. So Mendelson is teaching both of those
8 possible arc arrangements.
9 And then it goes on (as read):
10 "Further," in like Line 59, "radially
11 symmetric photodetector of arrays can
12 help to maximize the detection of back
13 scattered light from the skin, minimize
14 differences from local tissue and
15 homogeneity. Even in animal studies can
16 confirm this configuration. Cannot
17 completely without any errors, but it's
18 beneficial in improving the signal
19 choice."
20 So yeah, this is knowledge of a POSITA and, you
21 know, the combination is Lisogurski and LeBoeuf. And
22 here, I cite Mendelson is further corroboration of the
23 knowledge of a POSITA, in reading combination and
24 teaching the benefit of arrayed -- of arc arranged
25 emitters and detectors.

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1 MR. CHRISTOPHER: Move to strike as
2 nonresponsive.
3 BY MR. CHRISTOPHER:
4 **Q. I was just asking about one example in**
5 **Mendelson.**
6 **We can go back to LeBoeuf, Figures 8A and 8B.**
7 **Figure 8B, specifically.**
8 **Let me know when you're ready.**
9 A. I'm sorry. Where are we -- where are we going
10 back to now?
11 **Q. LeBoeuf, Figure 8B, please.**
12 A. 8B, LeBoeuf. Okay.
13 **Q. And I want to focus just on the detectors 26 to**
14 **start. The detectors are positioned between the cover 18**
15 **in the earbud housing 16. Correct?**
16 A. So the optical emitters, and looking at my
17 Page 131 -- or 134, where I've highlighted in colors, the
18 8A, B, and C from LeBoeuf. We have the optical emitters
19 in green, about an arc center. And we have the -- the
20 optical detectors in yellow about an arc, a larger
21 circle. And 16 is the -- the housing between.
22 **Q. Right. So focusing just on the detectors 26,**
23 **they're positioned between the cover 18 and the earbud**
24 **housing 16. Correct?**
25 A. Between 16 and 18, yes.

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1 **Q. And given that both the cover 18 and the earbud**
2 **housing are circular, the space between the earbud**
3 **housing 16 and the cover 18 also has a circular shape.**
4 **Correct?**
5 A. Yes.
6 **Q. Is there any way to arrange the detectors 26**
7 **between the cover 18 and the earbud housing 16 that is**
8 **not along an arc?**
9 A. Well, yes. A particular embodiment they made
10 certain geometry considerations and this is a plan, sort
11 of cross-section. A POSITA looking at the teachings --
12 and, again, this is not something that I did in isolation
13 with LeBoeuf. But they can choose, for example, to have,
14 instead of a singular base, they can have a perpendicular
15 base that comes out and arrange them along the length of
16 what is currently the -- of what is 16, you know, as one
17 possible. And that could be a linear arrangement.
18 But, again, that's not, you know, sitting here
19 on the spot now, making something up. But, you know, it
20 could be any number of ways that a POSITA would -- but
21 clearly, if a POSITA viewing LeBoeuf in view --
22 Lisogurski, in view of LeBoeuf, understands what's being
23 taught in the benefit of having these -- these
24 arrangements to improve signal and -- and in a particular
25 design.

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1 **Q. I don't think that quite answered it.**
2 **If we assume that we don't change anything else**
3 **about LeBoeuf, other than the arrangement of the**
4 **detectors 26 and we assume that we would still like the**
5 **detectors 26 to be between the cover 18 and the earbud**
6 **housing 16, is there any way in which those detectors 26**
7 **could be arranged in which they are not in an arc?**
8 MR. KIM: Objection, form.
9 THE WITNESS: But in some sense, you're asking,
10 I have a car and now, I want to move the engine into the
11 back, and I need to change other things. So there's a
12 particular embodiment that practices certain aspects of
13 the teachings.
14 And so it's -- it's not a matter of how, "Well,
15 hey, can I just suddenly do something very different,"
16 but doing something different depends on other -- other
17 factors as one point. I was not considering LeBoeuf by
18 itself. I didn't need to opine around whether I could
19 rearrange emitters and detectors in the embodiment, but
20 the embodiment, clearly, is teaching a concentric arc
21 arrangement.
22 Putting me on the spot here today, yes, I can
23 imagine various ways where I could -- without a really
24 good design, choose to put the emitters along the --
25 coming out of the page, if you will, or the detectors

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1 coming out of the page.
2 But, again, making up something on the spot
3 that a POSITA could consider as part of their design
4 space, but that's -- was not necessary in forming my
5 opinions.
6 BY MR. CHRISTOPHER:
7 **Q. Well, would you agree that the arc**
8 **configuration of the detectors is dictated by the**
9 **geometry of the housing 18 -- excuse me -- the cover 18**
10 **and the earbud housing 16?**
11 MR. KIM: Objection, form.
12 THE WITNESS: Again, I was not opining upon
13 LeBoeuf by itself. The layout of a device is dictated by
14 the considerations that you make. So it's not that we
15 make the device and now, figure out how to jam things in.
16 I'm co-designing the everything. And you -- if you want
17 to change one aspect, you end up changing other aspects.
18 So particular embodiment is designed to bring
19 things in the geometrical way, an optical way, an
20 electrical way, and the embodiment here is demonstrating
21 a circular arc arrangement, as I opined that, you know,
22 POSITA reading Lisogurski in view of LeBoeuf would
23 understand and the benefit of doing so.
24 MR. CHRISTOPHER: Why don't we -- why don't we
25 go off for a short break.

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1 (Recess.)
2 MR. CHRISTOPHER: All right. Back on the
3 record.
4 BY MR. CHRISTOPHER:
5 **Q. Dr. Anthony, if you could turn to Paragraph 55**
6 **of your declaration for the '304 patent.**
7 **Let me know when you're there.**
8 A. 55, yes.
9 **Q. 55. And in 55, you note that (as read):**
10 **"The board construed the phrase 'to**
11 **identify an object' to mean 'to recognize**
12 **or establish an object as being a**
13 **particular thing'" in the IPR for the**
14 **'484 patent. Correct?**
15 A. Yes.
16 **Q. Okay. And we talked about this earlier. You**
17 **submitted a declaration in the proceeding for the**
18 **'484 patent. Correct?**
19 A. Yes.
20 **Q. And you understand that the board's claim**
21 **construction phrase 'to identify an object' issued after**
22 **you had executed your declaration for the '484 patent.**
23 **Correct?**
24 A. The -- the board's decision came after my
25 declaration, yes.

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1 **Q. Right. And for purposes of the '304 patent,**
2 **you state here in Paragraph 55 that you've been**
3 **instructed to adopt the board's construction from the**
4 **'484 patent IPR in rendering your opinions. Correct?**
5 A. Yes.
6 **Q. Okay.**
7 A. Which is also consistent with the plain and
8 ordinary meaning of the term.
9 **Q. All right. You knew where I was going with my**
10 **next question.**
11 **How is the claim construction consistent with**
12 **the plain and ordinary meaning?**
13 MR. KIM: Objection, form.
14 BY MR. CHRISTOPHER:
15 **Q. Are you reviewing your declarations?**
16 A. I -- at the end of that I see -- I would say,
17 "See my discussion in Section IX.C.3.[12.b]."
18 **Q. Do you need me to repeat the question or are**
19 **you still reading?**
20 A. I'm still -- I went up to Section IX.C.3 and
21 reviewing what I wrote there, say "See my discussion." I
22 want to make sure that I'm reviewing my declaration
23 before I respond.
24 Okay. So can you repeat the question now?
25 I've refamiliarized myself with that section of the

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1 declaration.
2 **Q. Sure. And I'm using your words. In**
3 **Paragraph 55 of your declaration for the '304 patent, how**
4 **is the board's claim construction of the phrase "to**
5 **identify an object" consistent with the plain and**
6 **ordinary meaning?**
7 A. Well, again, meaning a POSITA reading the '484
8 would -- you know, would read "identify an object" would
9 understand it to, at least, mean to recognize or
10 establish an object as being a particular thing, which
11 is, as I say, consistent with the plain and ordinary
12 meaning a POSITA reading the '484 and also the -- the
13 '304. So I guess I'm...
14 **Q. I guess are you opining that there is a**
15 **difference between the board's claim construction for "to**
16 **identify an object" and the plain and ordinary meaning of**
17 **that term?**
18 MR. KIM: Objection, form.
19 THE WITNESS: Well, insofar that there's any
20 difference between the board's construction and the plain
21 and ordinary meaning, the arc meets the -- that
22 limitation to identify an object, though it's consistent
23 with the plain and ordinary meaning as I described.
24 BY MR. CHRISTOPHER:
25 **Q. It's possible there is a difference between the**

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1 **claim construction and the plain and ordinary meaning for**
2 **that term, "identify an object"?**
3 MR. KIM: Objection, form.
4 THE WITNESS: The -- the "to identify an
5 object," to recognize or establish an object as being a
6 particular thing is certainly consistent with the plain
7 and ordinary meaning, and a POSITA reading would -- in
8 the context would understand that the arc as I
9 disclosed -- as I described meets that limitation.
10 THE COURT REPORTER: I'm sorry, may we go off
11 the record.
12 MR. CHRISTOPHER: Sure.
13 (Recess.)
14 MR. CHRISTOPHER: All right. Back on the
15 record.
16 BY MR. CHRISTOPHER:
17 **Q. Prior to our short break, we were discussing**
18 **claim construction from the prior '484 decision for the**
19 **term "to detect an object." You understand that under**
20 **the board's claim construction, the term "to identify an**
21 **object" has a different meaning then the term "to detect**
22 **an object." Correct?**
23 A. Sorry. Can you repeat that question?
24 **Q. It may be easier if I just show you the**
25 **decision, so I'm going to show you. This is**

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1 **Exhibit 1015, which I believe has been submitted in all**
2 **of the proceedings.**
3 (Exhibit 1015 in each of the proceedings
4 was previously marked.)
5 BY MR. CHRISTOPHER:
6 **Q. And I'll represent to you this is the first**
7 **final written decision for the '484 patent?**
8 **Let me know when you have that opened.**
9 A. Yeah.
10 **Q. Turn to Page 10, please.**
11 **Let me know when you're there.**
12 A. Yes.
13 **Q. Do you see the Paragraph that starts with the**
14 **word "therefore"?**
15 A. Yes.
16 **Q. The board states here -- this is Page 10 of**
17 **Exhibit 1015 (as read):**
18 **"We decline to adopt petitioner's**
19 **proposal to construe the terms 'identify**
20 **an object' and 'detect an object' to have**
21 **the same meaning. Instead, we construe**
22 **these terms consistent with the**
23 **dictionary definitions of 'identify' and**
24 **'detect'; i.e., we construe 'to identify**
25 **an object' to mean to recognize or**

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1 **establish an objection as being a**
2 **particular thing, and we construe 'to**
3 **detect an object' to mean to discover or**
4 **notice the existence or presence of**
5 **something."**
6 **Do you see that?**
7 A. Yes.
8 **Q. Did you review this portion of the board's**
9 **decision when forming your opinions?**
10 A. As I highlight here, this is -- this is the
11 final written decision of the '484, yes.
12 **Q. Okay. And you understand that under the**
13 **board's claim construction, the term "to identify an**
14 **object" has a different meaning than "to detect an**
15 **object." Correct?**
16 A. So as written there, we construe "to identify
17 an object" to mean recognize or establish, and construe
18 "to detect" to mean discover or notice the existence or
19 presence.
20 **Q. Right. So different meanings for the phrase**
21 **"identify an object" and "detect an object." Correct?**
22 A. As is highlighted there, yes.
23 **Q. And you would agree that under the board's**
24 **claim construction, to discover or notice the existence**
25 **or presence of something is not identifying an object.**

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1 **Correct?**
2 MR. KIM: Objection, form.
3 BY MR. CHRISTOPHER:
4 **Q. Are you reviewing something other than the**
5 **board's decision?**
6 A. I'm just looking -- I'm making sure I'm reading
7 the claim of the -- of the '304. Configure for selection
8 or identification of an object.
9 Well, here in [12.b], I'm just for a moment
10 looking at Paragraph 352 of my declaration. The element
11 is (as read):
12 "The measurement system is at least in
13 part configured for selection or
14 identification of an object."
15 Identify or -- so select or identify. And then
16 I go on -- let's see.
17 **Q. To be clear, my question is just about the**
18 **claim construction. I want to make sure you understand**
19 **the claim construction from the board's prior decision.**
20 **So if you could turn back to Page 10 from**
21 **Exhibit 1015.**
22 **Let me know when you're back there.**
23 A. And just to review it, make sure what I say up
24 in the other section's on it.
25 Okay. So the "identify an object" consistent

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1 with plain and ordinary meaning. Adopted the board's
2 construction, which is also consistent with plain and
3 ordinary meaning. Okay.
4 And reask the question then?
5 **Q. Yeah. I'm not asking about '304 patent or your**
6 **declaration. I'm asking about the claim construction.**
7 **This is in Exhibit 1015, the prior board decision,**
8 **Page 10. And we talked about this a few minutes ago.**
9 **This is the claim construction you applied in**
10 **forming your opinions for the '304 patent. Correct?**
11 A. Yes.
12 **Q. And you understand that under the board's claim**
13 **construction, there is a difference between "to identify**
14 **an object" and "to detect an object." Correct?**
15 A. As highlighted there in the board's, yes.
16 **Q. And the board's construction for "to detect an**
17 **object" was to "discover or notice the existence or**
18 **presence of something." Correct?**
19 A. To detect, yes.
20 **Q. And my question was: Under the board's claim**
21 **construction, discovering or noticing the existence or**
22 **presence of something is not identifying an object.**
23 **Correct?**
24 MR. KIM: Objection, form and scope.
25 THE WITNESS: The board's decision here is

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1 "identify to recognize or establish and construe to
2 detect, discover, or noticed"; and the claim language,
3 though, in the '304 is "configured for selection or
4 identification."
5 BY MR. CHRISTOPHER:
6 **Q. Yeah, that's not my question.**
7 **My question is: Would discovering or noticing**
8 **the existence or presence of something qualify as**
9 **identifying an object under the board's claim**
10 **construction?**
11 A. Sorry. Say that again?
12 **Q. Would discovering or noticing the existence or**
13 **presence of something qualify as identifying an object**
14 **under the board's claim construction?**
15 A. Under the board's claim and highlighted there
16 is detecting of an object.
17 **Q. And detecting an object is not identifying an**
18 **object. Correct?**
19 MR. KIM: Objection, form and scope.
20 THE WITNESS: In that board's decision there,
21 yes.
22 BY MR. CHRISTOPHER:
23 **Q. Okay. Now, now we can turn to Claim 12 of the**
24 **'304 patent. If you could go to Exhibit 1001 from**
25 **IPR2025-01251, for the record.**

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1 **I'd like to direct you to 12 -- Claim 12.**
2 A. Sorry, we're going -- the '304 patent. Yes?
3 **Q. Yes. '304 patent, please.**
4 **And when you get there, I'll direct your**
5 **attention to Line 27.**
6 A. Okay.
7 **Q. Rather Line 128, do you see where it says**
8 **"identification of an object" in Claim 12 of the**
9 **'304 patent?**
10 A. (As read):
11 "Wherein the measurement system is at
12 least in part configured for selection or
13 identification of an object."
14 **Q. Right. And I just want to confirm, did you**
15 **apply the board's claim construction for the term "to**
16 **identify an object" for the phrase "identification of an**
17 **object" in Claim 12 of the '304 patent?**
18 A. Yes, I did. And as I described, it's
19 consistent with the board's -- Lisogurski teaches
20 identifying an object, the blood constituent
21 oxyhemoglobin. Lisogurski's calculation or measurement
22 of the amount of oxyhemoglobin exists in blood
23 including -- includes distinguishing and identifying the
24 oxyhemoglobin blood constituents. And this is consistent
25 with my opinions regarding the '484. And then going

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1 on...
2 **Q. I think that answered it.**
3 **If you can turn to Dependent Claim 26 of the**
4 **'304 patent.**
5 **Let me know when you're there.**
6 A. Twenty-six?
7 **Q. Yeah, Claim -- Dependent Claim 26.**
8 A. Yeah.
9 **Q. You see it's around Line 34 or 33 where it says**
10 **"identification of an object"?**
11 A. (As read):
12 "In part, configure for selection or
13 identification of an object."
14 **Q. And I just want to confirm, did you apply the**
15 **board's claim construction from the '484 patent for the**
16 **phrase "identify of an object" in Claim 26 of the**
17 **'304 patent?**
18 A. So it's consistent with my discussion of --
19 what was it -- 12.
20 **Q. You applied the same claim construction for**
21 **Dependent Claims 12 and 26. Correct?**
22 A. Yes.
23 **Q. Okay. That's all I was trying to do.**
24 **If we could turn back to your declaration for**
25 **the '304 patent. Paragraph 356.**

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1 A. 356?
2 **Q. 356, please.**
3 A. Yeah, okay.
4 **Q. And I would like to ask you about a portion**
5 **that's on, it looks like Page 183. There's a sentence**
6 **that starts with the word "second."**
7 **Do you see that?**
8 A. Yes.
9 **Q. All right. And you wrote (as read):**
10 **"Second, Lisogurski's disclosure**
11 **identifying an object as recited in '484,**
12 **Claims 3, 8, meets selection or**
13 **identification of an object. As recited**
14 **in '304, [12.b], because selection is**
15 **recited as an alternative to**
16 **identification. And thus, [12.b] is met**
17 **by Lisogurski's identification alone."**
18 **Do you see that?**
19 A. Yes.
20 **Q. And so your opinion is that Lisogurski meets**
21 **the identification of an object portion of Element [12.b]**
22 **in the '304 patent. Correct?**
23 A. Well, certainly, Lisogurski was identifying
24 that it's hemoglobin. And also, it's selecting the
25 wavelengths such that it's -- would be -- meet the

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1 selection or -- or alternative as well, but certainly, as
2 I highlight here, Lisogurski's meeting the limitation.
3 **Q. You didn't offer an opinion in your declaration**
4 **that Lisogurski meets the selection of an object option**
5 **in Element [12.b]. Correct?**
6 MR. KIM: Objection, form.
7 THE WITNESS: Well, I mean, as I highlight
8 there, right, back in Paragraph 355, the board found that
9 I agree that the Lisogurski sensor calculates an amount
10 of blood constituents in a tissue sample. And Lisogurski
11 teaches identifying an object; i.e., an object -- the
12 blood constituent oxyhemoglobin.
13 And Lisogurski discloses, identifying an object
14 by measuring the light intensity and the amount of light
15 by the tissue to calculate any number of physiological
16 parameters, including the amount of blood constituents.
17 So the board, Lisogurski discloses an amount of
18 measuring oxygen saturation to use as different
19 wavelengths, to distinguish hemoglobin from oxygen.
20 Lisogurski teaches identifying an object; i.e., the blood
21 constituent oxyhemoglobin.
22 I'm agreeing with that as well, and
23 highlighting both the -- the -- the final written
24 decision in Lisogurski. In other words, Lisogurski's
25 calculation of measurement in the amount of oxyhemoglobin

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1 distinguishes and identifies the oxyhemoglobin blood
2 constituent, which is consistent with my opinions, and go
3 on and, indeed, Lisogurski is meeting the identification.
4 I could also argue, and I didn't here, but the
5 selection, it would also identi- -- I think, meet the
6 selection criteria, but it only needs to meet one. It
7 certainly meets the identification.
8 BY MR. CHRISTOPHER:
9 **Q. You got -- you got to my point at the end. You**
10 **haven't opined in your declaration that Lisogurski meets**
11 **the selecting or selection portion of Claim 12 in the**
12 **'304 patent. Correct?**
13 MR. KIM: Objection, form.
14 THE WITNESS: Lisogurski certainly meets the --
15 the claim of selection or identification. And I didn't
16 need to opine extensively on both, it meets the one, you
17 know, but, you know, sitting here today, I think there's
18 also a strong-arm agreement for meeting the selection
19 because Configure 2 select preferentially the
20 oxyhemoglobin with the wavelengths and everything to --
21 to make that selection, but it's certainly identifying
22 it.
23 BY MR. CHRISTOPHER:
24 **Q. Wait. You didn't offer that opinion that**
25 **Lisogurski teaches selection in your declaration, you're**

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1 **offering that opinion now for the first time in the**
2 **deposition. Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: You've been asking about this and
5 I'm just responding to your questions with respect to
6 what I've opined here. And indeed, Lisogurski meets the
7 limitation of selection or identification. I opined here
8 that it meets, through the -- the identification, but I
9 think it could. And I was not opining upon that in my
10 declaration, but it certainly -- I think an argument
11 could be made as well for the selection.
12 BY MR. CHRISTOPHER:
13 **Q. Yeah. So just so the record is clear, you**
14 **didn't opine on selection -- Lisogurski meeting selection**
15 **in your declaration. Correct?**
16 MR. KIM: Same objection.
17 THE WITNESS: Again, in Lisogurski's meeting
18 the limitation, at least of the identification, and it
19 may be meeting it as -- with the selection as well, I was
20 not opining upon that part in the declaration. But in
21 our conversation here today, I'm also recognizing that it
22 could arguably have met this via the selection process.
23 But certainly, it is with the identification process.
24 BY MR. CHRISTOPHER:
25 **Q. Right. So the answer is, yes, you didn't opine**

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1 **on selection for Lisogurski in your declaration.**
2 **Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: Again, Lisogurski meets the
5 limitation, certainly through the identification, which
6 is what I opined on. And in discussion here today, I'm
7 also highlighting that I think there's a strong argument
8 by which it could have met it through the selection. But
9 indeed, in my declaration, I was opining upon the
10 identification.
11 MR. CHRISTOPHER: So I'm going to move to
12 strike as nonresponsive.
13 BY MR. CHRISTOPHER:
14 **Q. "Yes" or "no," did you --**
15 MR. KIM: I disagree with the objection.
16 MR. CHRISTOPHER: Well, let me finish my
17 question.
18 BY MR. CHRISTOPHER:
19 **Q. "Yes" or "no," did you opine in your**
20 **declaration that Lisogurski meets selection of an object,**
21 **as recited in the '304 patent? "Yes" or "no"?**
22 MR. KIM: Objection to form.
23 THE WITNESS: I have answered your question.
24 I'll answer it again.
25 Lisogurski, as opined in the declaration,

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1 certainly meets it through the identification. But as
2 we've discussed, also, I think there's a strong argument
3 by which it could meet the selection criteria. But it
4 meets the limitation of the selection or identification.
5 In the declaration, I opined about the identification,
6 yes.
7 MR. CHRISTOPHER: Move to strike as
8 nonresponsive.
9 BY MR. CHRISTOPHER:
10 **Q. "Yes" or "no," did you opine in your**
11 **declaration that Lisogurski meets selection of an object,**
12 **as recited in the '304 patent?**
13 MR. KIM: Same objection to the form and also
14 to the motion to strike.
15 THE WITNESS: Again, as I described, Lisogurski
16 meets the limitation. The limitation includes selection
17 or identification. As I've said several times, I opine
18 in the identification around identification.
19 But as a part of our discussion here, you asked
20 me to further elaborate. And in my elaboration, I'm also
21 highlighting that selection, I believe, would also be a
22 valid way by which it meets the limitation. But in my
23 declaration, indeed, I was talking about identification.
24 MR. CHRISTOPHER: I'm going to move to strike,
25 again, as nonresponsive. And I'm going to -- I'm going

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1 to try it one more time.
2 BY MR. CHRISTOPHER:
3 **Q. "Yes" or "no," did you opine in your**
4 **declaration that Lisogurski meets selection of an object.**
5 **As recited in Claim 12 of the '304 patent? "Yes" or**
6 **"no"?**
7 MR. KIM: Same objection to the form. And
8 also, to the motion to strike.
9 THE WITNESS: And as I've answered previously,
10 Lisogurski meets the limitation, which includes the
11 selection or identification. In my declaration, I opined
12 upon the identification. And in our discussion, you've
13 asked me to describe how Lisogurski interacts here.
14 And I've also recognized that I think there's
15 an argument to be made for how it also would meet through
16 the selection. It does not need to meet for both. In my
17 declaration, I opined about the identification, but I
18 think it also can meet through the selection criteria.
19 MR. CHRISTOPHER: All right. Move to strike,
20 again, as nonresponsive.
21 BY MR. CHRISTOPHER:
22 **Q. Let's look at 356 of your '304 declaration.**
23 **Again, this is very last sentence. You cite**
24 **paragraphs 210 through 223 of your declaration for the**
25 **'484 patent?**

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1 A. I'm sorry. Which paragraph did you say?
2 **Q. 356, please. And I'm --**
3 A. The paragraph that we were just -- that we were
4 just --
5 **Q. Yeah, yeah. So sticking with Paragraph 356 and**
6 **I'm just asking you about the very last sentence in that**
7 **paragraph.**
8 **Do you see at the end of that sentence, you**
9 **cite paragraphs 210 through 223 of your declaration for**
10 **the '484 patent?**
11 A. Yes.
12 **Q. Okay. Now, as we discussed earlier, the**
13 **board's claim construction for identifying object had not**
14 **issued at the time that you authored your declaration for**
15 **the '484 patent. Correct?**
16 A. Correct.
17 **Q. Now, that means you didn't address the board's**
18 **claim construction for the phrase to identify an object**
19 **in your declaration for the '484 patent. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: I'm looking at my prior '484.
22 BY MR. CHRISTOPHER:
23 **Q. Well, just as a matter of logic, you couldn't**
24 **have addressed the claim construction in a declaration**
25 **that didn't exist at the time you authored the**

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1 **declaration. Correct?**
2 MR. KIM: Objection, form.
3 THE WITNESS: I'm confirming if I made any
4 constructions in the '484. So I'm just going to open the
5 '484.
6 BY MR. CHRISTOPHER:
7 **Q. Sure.**
8 A. Okay. So the -- I was not offering
9 constructions around detection in the '484.
10 **Q. Sorry. When you say "detection," detection of**
11 **an object?**
12 A. Correct.
13 **Q. Okay. Can you turn to the '790 patent. This**
14 **was something I put in the chat earlier today. I can --**
15 **I can resend it if you need it. Let me know.**
16 A. The patent or my declaration?
17 **Q. The patent first, please.**
18 A. Okay.
19 **Q. Okay. And if I could direct your attention to**
20 **Claim 7. This is in Column 87.**
21 A. Yes.
22 **Q. All right. Claim 7, the very last clause**
23 **states (as read):**
24 **"Wherein the wearable device is at**
25 **least, in part, configured to identify an**

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1 **object."**
2 **Do you see that?**
3 A. Yes.
4 **Q. And I just want to confirm, did you apply the**
5 **board's claim construction for -- to identify an object**
6 **from the '484 patent IPR in forming your opinions of**
7 **Claim 7 of the '304 patent -- excuse me -- '970 patent?**
8 A. Nine -- '790, you mean?
9 **Q. Let -- let me restart I'll withdraw.**
10 **Did you apply the board's claim construction**
11 **for the term "to identify an object" from the '484 patent**
12 **IPR for the phrase "to identify an object" in Claim 7 of**
13 **the '790 patent?**
14 A. I'm looking at my '790 declaration. So as I
15 described in Paragraph 56, in the '484 final patent
16 written decision, I understand the board construed
17 "identify an object" to mean recognize or establish an
18 object as being a particular thing. For the purposes of
19 this declaration, meaning on the '790, I have instructed
20 to adopt the board's construction, and for the reasons
21 below, the prior art discloses this limitation under the
22 board's construction, which is also consistent with the
23 plain and ordinary meaning of the term. So yes.
24 **Q. Okay. Can you turn back to the '304 patent for**
25 **me. This is Exhibit 1001 in IPR2025-01251 for the**

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1 **record.**
2 A. Okay.
3 **Q. And if you could turn for me to Column 18,**
4 **starting at Line 52.**
5 A. Sorry. 304, you said?
6 **Q. Yeah, 304, please.**
7 A. Column what again?
8 **Q. Column 18. And I'll direct your attention to**
9 **Line 52, which is towards the bottom of the column.**
10 A. Column 18, Line 52. Okay.
11 **Q. All right. And here the specification states**
12 **(as read):**
13 **"One approach to non-invasive**
14 **monitoring of blood constituents or blood**
15 **analytes is to use near-infrared**
16 **spectroscopy such as absorption**
17 **spectroscopy or near-infrared diffuse**
18 **reflection or transmission spectroscopy."**
19 **Do you see that?**
20 A. I'm sorry. No. You said column?
21 **Q. It could very well be that I have the wrong**
22 **cite in the outline. Yeah, it's completely the wrong**
23 **column. So not Column 18. Column 4. Column 4, Line 52.**
24 **Let me know when you're there.**
25 A. Okay.

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1 **Q. All right. Starting at Line 52 of the**
2 **specification reads (as read):**
3 **"One approach to non-invasive**
4 **monitoring of blood constituents or blood**
5 **analytes is to use near-infrared**
6 **spectroscopy."**
7 **Do you see that?**
8 A. Yes.
9 **Q. Can you give me an example of a blood**
10 **constituent?**
11 A. Oxygenated, deoxygenated blood.
12 **Q. What about blood analytes? Can you give me an**
13 **example of a blood analyte?**
14 A. Constituents are blood analytes. Components of
15 blood. I mean, the various sort of -- there are many
16 components of blood.
17 **Q. And I think you touched on my next question**
18 **where I'm going with this: Is there a difference between**
19 **blood constituents and blood analytes, or are those terms**
20 **synonymous to a person of skill in the art?**
21 MR. KIM: Objection, form and scope.
22 THE WITNESS: Well, for example, you know, as I
23 opined upon in '304 in highlight Marbach, for example.
24 Marbach emphasizes combined analysis of multiple signals,
25 enables accurate quantification of analytes like glucose.

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1 BY MR. CHRISTOPHER:
2 **Q. So an example of a blood analyte would be a --**
3 **glucose. Correct?**
4 A. That's one example.
5 **Q. Is glucose a blood constituent?**
6 A. Well, I think a POSITA reading this would
7 understand it's the monitoring -- monitoring of the
8 things that are in the blood: Constituents, analytes.
9 Didn't need to opine upon the exact differences between
10 the two, but monitoring stuff that is in the blood that
11 can preferentially be detected with light.
12 **Q. So I'm going to go back to my question from a**
13 **moment ago: Would a person of skill in the art**
14 **understand that there is a difference between a blood**
15 **constituent and a blood analyte?**
16 MR. KIM: Objection, form and scope.
17 THE WITNESS: Again, I think a POSITA reading
18 this would understand the general context. It's
19 measuring the -- monitoring -- basically monitoring the
20 stuff that's in the blood, various constituents that make
21 up blood or the chemicals that are in blood. But it's --
22 a POSITA reading in context would understand it's
23 measuring things in the blood, optically.
24 BY MR. CHRISTOPHER:
25 **Q. Okay. Can you tell me the difference between a**

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1 **blood constituent and a blood analyte?**
2 MR. KIM: Same objection.
3 THE WITNESS: In forming my opinions, I didn't
4 need to construe a bounding line between blood
5 constituents or blood analytes. It's the stuff that's in
6 the blood that can be non-invasively monitored with
7 optical techniques.
8 BY MR. CHRISTOPHER:
9 **Q. I understand you, you know, didn't -- may not**
10 **have done this in forming your opinions, and I'm just**
11 **asking you today: Do you know if there's a difference**
12 **between blood constituents and blood analytes?**
13 MR. KIM: Objection, form and scope.
14 THE WITNESS: Again, I didn't need to construe
15 a definition of blood constituents or analytes in forming
16 my opinions, and sitting here today, it's, as I'm
17 describing, it's the stuff that's in the blood that could
18 be measured optically.
19 BY MR. CHRISTOPHER:
20 **Q. If you could turn to --**
21 A. And, I guess, I would also highlight for a
22 moment just further in column -- in the context of
23 '304 patent. Beyond the problem of other blood
24 constituents or analytes having overlapping spectral
25 features, it may be difficult to observe glucose spectral

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1 signatures and its constituents of water, adipose,
2 collagen, elastins. So certainly other -- other stuff in
3 the blood.
4 **Q. Can you turn to Column 35 of the '304 patent?**
5 A. I'm sorry, which column?
6 **Q. Column 35, please.**
7 A. Thirty-five of the '304?
8 **Q. Yes. And I'll direct your attention to**
9 **Line 17.**
10 A. Okay.
11 **Q. You see in the first sentence in that Paragraph**
12 **it reads (as read):**
13 **"In addition, and it may be**
14 **advantageous to use pattern-matching**
15 **algorithms and other software and**
16 **mathematical methods to identify the**
17 **blood constituents of interest."**
18 **Do you see that?**
19 A. Yes.
20 **Q. And then when you scroll down, starting at**
21 **Line 27, the specification reads (as read):**
22 **"One of the issues in measuring a**
23 **particular blood constituent is the**
24 **interfering and overlapping signal from**
25 **other blood constituents. The selection**

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1 **of the constituent of interest may be**
2 **improved using a number of techniques."**
3 **Do you see that?**
4 A. Yes.
5 **Q. Would you agree that in order to select a**
6 **particular blood constituent of interest, one first needs**
7 **to recognize or establish that a blood constituent is the**
8 **constituent of interest?**
9 MR. KIM: Objection, form.
10 THE WITNESS: I'm confused. Can -- can you
11 reask the question?
12 BY MR. CHRISTOPHER:
13 **Q. Right. So in Line 29 it refers to "selection**
14 **of the constituent of interest."**
15 **Do you see that?**
16 A. Yes.
17 **Q. And so in order to select a constituent of**
18 **interest, one would first need to recognize or establish**
19 **that the constituent is the constituent of interest.**
20 **Correct?**
21 MR. KIM: Objection, form.
22 THE WITNESS: Well, that section in particular
23 is talking about the -- improving something, improving
24 the selection. So you can have ways to improve the
25 selection that's described: Higher light level,

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1 intensity, improve signal to noise, mathematical
2 modeling. I believe I opine upon this in the, you
3 know...
4 BY MR. CHRISTOPHER:
5 **Q. Yeah, that's not my question at all. Maybe**
6 **simplify the question: In order to select a constituent**
7 **of interest, one first must identify that constituent of**
8 **interest. Correct?**
9 MR. KIM: Objection, form.
10 THE WITNESS: Well, what's being described here
11 is selection. I'm not sure why you're asking about
12 detection. It's the selection of constituents may be
13 improved using a number of techniques. Again, I was not
14 opining about that sentence in isolation, but -- I'm not
15 sure I fully understand your -- your question.
16 BY MR. CHRISTOPHER:
17 **Q. Well, the sentence is describing selecting a**
18 **constituent of interest. Correct?**
19 A. Correct.
20 **Q. And my question is: In order to select a**
21 **constituent of interest in blood, you first have to**
22 **identify the constituent as being the one you're**
23 **interested in. Correct?**
24 MR. KIM: Objection, form.
25 THE WITNESS: Well, where does it say that?

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1 It's just saying selection of the constituent of interest
2 may be improved using a number of techniques. So
3 you're -- you're --
4 BY MR. CHRISTOPHER:
5 **Q. I'm asking you --**
6 A. -- asking about a previous step of something?
7 **Q. I'm asking you as a person of ordinary skill in**
8 **the art. You would understand that in order to select a**
9 **constituent of interest, inherent in that is you must**
10 **identify the constituent as being the one you're**
11 **interested in. Correct?**
12 MR. KIM: Objection, form.
13 THE WITNESS: Just got the spinning wheel on
14 Adobe.
15 BY MR. CHRISTOPHER:
16 **Q. I'm sorry. Are you reviewing the document**
17 **right now?**
18 A. I had to go to paper. I'm getting the spinning
19 wheel of death on Adobe.
20 **Q. Okay. We were looking at the discussion in**
21 **Column 35 of the '304 patent.**
22 **And I could repeat the question if you'd like.**
23 A. Go ahead.
24 **Q. My question was: In order to select a blood**
25 **constituent of interest, one would need to first identify**

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1 **the constituent as being the constituent of interest.**
2 **Correct?**
3 MR. KIM: Objection, form.
4 THE WITNESS: I'm going -- so that selection --
5 discussion around selection shows up, for example, in
6 Claim 12. I'm going to go to my declaration paper.
7 Sorry. Can -- sorry. Thank you.
8 It was just a cleaning crew coming in.
9 BY MR. CHRISTOPHER:
10 **Q. So you're looking at your declaration for the**
11 **'304 patent?**
12 A. '304, and then I'm going back and making sure.
13 I think the first discussion around selection from
14 constituents -- let's see -- is in Claim 12.
15 **Q. Yeah, I'll withdraw it and ask it in a even**
16 **similar way, just in terms of plain English.**
17 **Throughout the deposition today, I've put a**
18 **number of exhibits in our Zoom chat. Correct?**
19 A. Yes.
20 **Q. And they show up as little PDF icons in the**
21 **chat. Right?**
22 A. Yes.
23 **Q. Okay. If I asked you to select the**
24 **'304 patent, you would have to identify the PDF as**
25 **corresponding to the '304 patent to be able to select it.**

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1 **Correct?**
2 MR. KIM: Objection, form.
3 THE WITNESS: Well, I mean, I think in the
4 context of the -- the discussion here, you have potential
5 blood constituents, for example, in that first sentence
6 that interfere and overlap, and so there's a fuzziness
7 associated with detection or selection. So it's not so
8 clear that there is a clear detection before a selection.
9 But you can improve selection and potentially detection.
10 It's not so you do it one thing, then the next, but you
11 can improve selection by a number of techniques, select
12 preferentially the -- the hemoglobin by increasing the
13 light at that wavelength, for example. You haven't
14 predetected it, but you're trying to improve the
15 selectivity. So it's not the -- the metaphor -- or is it
16 analogy, I'm not sure -- of PDFs is not -- in the context
17 of the '304 is not exactly the same.
18 BY MR. CHRISTOPHER:
19 **Q. You mentioned a fuzziness and it's not being**
20 **clear whether detection occurs before selection. But as**
21 **we discussed earlier --**
22 A. You preferentially select.
23 Sorry.
24 **Q. I'm going to say, we discussed earlier under**
25 **the claim construction, there's a difference between**

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1 **detection and identification. Correct?**
2 A. We're not talking -- we're talking selection
3 and you're asking about detection and selection. No
4 indication --
5 **Q. That's not what I'm asking. I'm asking, in**
6 **order to select a blood constituent of interest, you must**
7 **identify the blood constituent of interest in order to**
8 **make the selection. Correct?**
9 MR. KIM: Objection, form.
10 THE WITNESS: So, again, in the context of what
11 is written there in that Paragraph, in isolation, one of
12 the issues of measuring a particular blood constituent is
13 the interfering and overlapping signal from other blood
14 constituents.
15 So the selection of the constituent of interest
16 may be improved using a number of techniques. And you
17 can improve the signal-to-noise ratio, you can apply
18 algorithms. You can, for example, increase the number of
19 wavelengths and the wavelength range to improve the
20 ability to discriminate one signal from the next -- from
21 another.
22 So it's not in that -- what's described there
23 is not necessarily a predetection step. It's -- it's
24 using techniques to preferentially select a constituent
25 and improve that ability to select it amongst other

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1 things, which could turn into detection, but here, it's
2 not necessarily a detect and select phenomenon.
3 BY MR. CHRISTOPHER:
4 **Q. Do you have any opinion, sitting here today, as**
5 **to whether or not it is required to identify a blood**
6 **constituent of interest in order to select a blood**
7 **constituent of interest?**
8 MR. KIM: Objection, form.
9 THE WITNESS: So, again, I mean, I -- I
10 answered it. That sentence is in the context of a
11 Paragraph that talks about the interfering and
12 overlapping signal from other blood constituents, right.
13 And so, it's talking about preferentially
14 selecting constituents amongst a noisy set of
15 constituents. So you're not pre-detecting, you're
16 improving the selectivity.
17 So no, you don't have to necessarily detect
18 before you select. You're doing things to improve the
19 selectivity of overlapping a number of techniques to
20 improve the selectivity of the constituents.
21 And mathematical modeling, algorithms to make
22 sense of the data, adding more wavelengths, using more
23 sampling wavelengths to further discriminate one signal
24 from the other.
25 So you're not -- you're not deducting, you're

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1 improving the selectivity.
2 BY MR. CHRISTOPHER:
3 **Q. I think this is getting entirely confused with**
4 **that, you focusing on that passage. So let's focus on,**
5 **for instance, Claim 12 of the '304 patent.**
6 A. Okay.
7 **Q. In Claim 12, it talks about selection or**
8 **identification of an object. Correct?**
9 A. Okay. So now, let's talk about Claim 12,
10 great.
11 **Q. Right. And I've been trying to ask you: In**
12 **order to select an object, would it be required to first**
13 **identify the object?**
14 A. Well, you've been asking me about that sentence
15 in that paragraph and I've been trying to explain --
16 **Q. No, I haven't.**
17 A. -- how I'm interpreting that. And so now, I'm
18 going to read for a second my declaration around
19 Claim 12.
20 **Q. What are you reading from your declaration?**
21 A. We're highlighting now Claim 12 --
22 **Q. Right. Right. And I'm asking you: As a**
23 **person of ordinary skill in the art, reading Claim 12,**
24 **would you understand that it is required to identify an**
25 **object in order to select an object or do you not have an**

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1 **opinion on that?**
2 MR. KIM: Objection, form.
3 BY MR. CHRISTOPHER:
4 **Q. Still reviewing your declaration?**
5 A. Yes.
6 **Q. Are you still reviewing? Because we've been**
7 **going on about four minutes now?**
8 A. Yes.
9 So in 12, for example, the first 12A, wherein
10 the measurement system is configured to perform pattern
11 identification or classification wherein the measurement
12 system is configured to apply a threshold function to a
13 comparison. And that threshold is a function of how well
14 it's potentially identified or classified.
15 And so the selection can be improved in that
16 classification identification, through the -- that
17 improved the signal-to-noise ratio were applying
18 progression signal processing methodologies or
19 multivariate technologies.
20 So now that I've got my head re-wrapped around
21 how I'm discussing this, can you reask the question
22 again?
23 **Q. Yeah. My question is: When a person of**
24 **ordinary skill in the art understand, in the context of**
25 **Claim 12, that in order to select an object, one would**

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1 **need to first identify the object?**
2 MR. KIM: Objection, form.
3 THE WITNESS: In the context of the patent,
4 it's talking about selection or identification and
5 selection can be done -- can be improved or -- selection
6 is partial -- a function of the wavelengths you use and
7 the -- the signal-to-noise ratio, and a threshold that
8 you choose to potentially identify.
9 But, no, you don't have -- you don't have to
10 pre -- it's not selection then identify. It's select or
11 identify. And they're coupled to the various signals
12 you're -- or wavelengths you're going to select and use
13 in the -- the -- the light intensity, for example.
14 BY MR. CHRISTOPHER:
15 **Q. So let me ask you this, and I want to be**
16 **specific here. I'm not talking about identification.**
17 **Now, I'm going to change gears and talk about detection.**
18 **Would a person of skill in the art understand**
19 **that in order to select an object, one must first detect**
20 **the object?**
21 MR. KIM: Objection, form.
22 THE WITNESS: Well, let me -- let me
23 potentially use another analogy, since you're using PDF
24 analogies.
25 ///

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1 BY MR. CHRISTOPHER:
2 **Q. Okay.**
3 A. The way that a aircraft is -- a unique aircraft
4 is found, right, you have a tar -- you have a radar
5 signature that has been configured with the frequency in
6 a pattern that you're looking for. So you're not
7 detecting it first, but you're selecting it first, you're
8 selecting the thing you're preferentially looking for.
9 So detection -- so you can select before you
10 detect in that example. So in the context of -- you're
11 not necessarily having to detect in order to do the
12 select, in the context of the patent.
13 **Q. Okay. So to recap, in your view, there's no**
14 **requirement that an object be either identified or**
15 **detected in order to select the object. Is that correct?**
16 MR. KIM: Objection, form.
17 THE WITNESS: I'm sorry. I -- I'm now -- I
18 need you to reask that.
19 BY MR. CHRISTOPHER:
20 **Q. Yeah. And I'll -- let's do it in pieces. And**
21 **I'm not trying to put words in your mouth.**
22 **I think you testified that a person of skill in**
23 **the art would understand that identification is not**
24 **required in order to select an object. Right?**
25 MR. KIM: Objection, form.

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1 THE WITNESS: So, again, I'm not opining, in
2 isolation, selection, or identification. In the context
3 of the patent, [12.b], which talks about selection or
4 identification of an object, and I describe in [12.b], my
5 discussion in Paragraph 352, Lisogurski, in view of Tran.
6 I can -- I think I'm getting hung up on sort of
7 the general -- the more general question you're asking
8 about PDF selection. And -- but in the context of the
9 patent, Lisogurski in view of Tran, meets the limitation
10 as I describe in those paragraphs 352 through 356.
11 BY MR. CHRISTOPHER:
12 **Q. All right. You know what, we'll just move on.**
13 **It sounds like you don't have any opinions on the -- I'm**
14 **just going to give you one more opportunity.**
15 **You don't have any opinions on the difference**
16 **between identification of an objection and selection of**
17 **an objection. Correct?**
18 MR. KIM: Objection, form.
19 THE WITNESS: Again, as I've explained, you can
20 select what object you're going to be preferentially
21 monitoring by considering wavelength. Lisogurski
22 identifies an object by measuring the light intensity, so
23 the amount of hemoglobin. So it's -- it's -- Lisogurski
24 is teaching, identifying an object, the blood
25 constituents oxyhemoglobin.

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1 MR. CHRISTOPHER: Okay. I'm going to move to
2 strike as nonresponsive.
3 I think we've got about 25 minutes. Let's take
4 a short break and then we'll wrap up. Five minutes.
5 (Recess.)
6 MR. CHRISTOPHER: All right. Back on the
7 record.
8 BY MR. CHRISTOPHER:
9 **Q. All right. Welcome back, Dr. Anthony.**
10 **Did you discuss your testimony during our**
11 **break?**
12 A. No.
13 **Q. Okay. And if you could turn to Paragraph 353**
14 **of your declaration for the '304 patent?**
15 A. Okay.
16 **Q. Do you see where you wrote, about halfway**
17 **through (as read):**
18 **"New language that was not previously**
19 considered (improve a signal-to-noise
20 ratio of the selection or identification
21 by applying regression signal proceeding
22 methodologies or multivariate
23 techniques)."
24 Do you see that?
25 A. Yes.

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1 **Q. And so the language "applying regression signal**
2 **processing methodologies or multivariate techniques" is**
3 **new and was not addressed in the prior IPR decisions.**
4 **Correct?**
5 A. That is correct.
6 **Q. Okay. And then if you scroll down to**
7 **Paragraph 358, please, pages down. Let me know when**
8 **you're there.**
9 A. Yes.
10 **Q. All right. In the very first sentence, you**
11 **wrote (as read):**
12 **"Further, a person of ordinary skill**
13 **in the art would have found it obvious to**
14 **use multivariate techniques to implement**
15 **Lisogurski's improvement of**
16 **signal-to-noise ratios because**
17 **multivariate techniques are commonly used**
18 **methods to clean up and improve the**
19 **accuracy of data."**
20 **Do you see that?**
21 A. Yes.
22 **Q. And you haven't opined, in Paragraph 358, that**
23 **Lisogurski expressly discloses using multivariate**
24 **techniques. Correct?**
25 A. This is Lisogurski in combination with Tran or

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1 Lisogurski in combination with -- with both.
2 **Q. Right. And my -- and my question is focusing**
3 **on Paragraph 358.**
4 **You don't cite any explicit disclosure of**
5 **multivariate techniques from Lisogurski's in this**
6 **paragraph. Correct?**
7 A. In going back, and my motivations to combine
8 Lisogurski or -- or Lisogurski, LeBoeuf with Tran.
9 **Q. Well, hold on. My question is about**
10 **Paragraph 358.**
11 **Do you understand that?**
12 A. Correct. But it's the section that I'm talking
13 about the combination of Lisogurski with Tran or
14 Lisogurski with LeBoeuf and Tran.
15 **Q. No. My question is Paragraph 358.**
16 **In Paragraph 358, you do not cite an explicit**
17 **disclosure from Lisogurski to multivariate techniques.**
18 **Correct?**
19 A. In the section, I talk about Lisogurski,
20 knowledge of a POSITA in combination with Tran. But
21 here, I'm -- when I'm discussing Lisogurski, I point, for
22 example, to a corroborative preference that a POSITA
23 would be familiar with, when improving signal-to-noise
24 ratio, U.S. Patent No. 5,360,004, for example.
25 Also, Marbach as another example. Purdy and

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1 others with the knowledge of techniques, algorithmic
2 techniques to improve signal to noise.
3 **Q. All right.**
4 MR. CHRISTOPHER: I'm going to move to strike
5 as nonresponsive. This is a -- this is just wasting
6 time.
7 BY MR. CHRISTOPHER:
8 **Q. You don't cite an explicit disclosure from**
9 **Lisogurski multivariate techniques in Paragraph 358.**
10 **Correct?**
11 A. What I described in 358 is a POSITA would have
12 been -- found it obvious to use multivariate techniques
13 to Lisogurski's improvements of signal-to-noise ratios.
14 Because a POSITA's knowledge, at the time, included the
15 benefit of using multivariate techniques.
16 And as I described in my -- Lisogurski itself
17 saying multivariate techniques, no. But what I'm opining
18 about is knowledge of a POSITA in context of Lisogurski,
19 in combination with LeBoeuf and/or Tran.
20 **Q. And I need you to just focus on my question so**
21 **we can get through this a lot quicker.**
22 **Can you turn to Claim 26 of the '304 patent.**
23 A. Your audio dropped out for a moment, I'm sorry.
24 **Q. Can you turn to Claim 26 of the '304 patent?**
25 A. Claim 26. Okay.

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1 **Q. And this is the second wherein clause. Do you**
2 **see where it reads (as read):**
3 **"Wherein the wearable device is at**
4 **least in part configured for selection or**
5 **identification of an object and wherein**
6 **the wearable device is configured to**
7 **improve a signal-to-noise ratio of the**
8 **selection or identification."**
9 **Do you see that?**
10 A. Yes.
11 **Q. And when Claim 26 refers to "improve a**
12 **signal-to-noise ratio," it's referring to the**
13 **signal-to-noise ratio of the selection or identification.**
14 **Correct?**
15 A. (As read):
16 "Wherein the wearable device is
17 configured to improve a signal-to-noise
18 ratio of the selection or the
19 identification by applying regression
20 signal processing methodology or
21 multivariate techniques," yes.
22 **Q. Look at Exhibit -- this is 1027, the Tran**
23 **reference.**
24 **Let me know when you have that.**
25 A. Dangerous to go back to PDF here, but we'll --

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1 **Q. It's in chat.**
2 A. Thank you.
3 Tran, okay. Tran, yes.
4 **Q. Okay. Can you turn to Column 22 starting at**
5 **Line 33?**
6 A. Column 22.
7 **Q. All right. Starting at Line 23, it reads --**
8 A. So is it 23 or 33?
9 **Q. Column 22, Line 33 -- 23. 23.**
10 **And it reads (as read):**
11 **"In one embodiment, data-driven**
12 **analyzers may be used to track the**
13 **patient's habits."**
14 **Do you see that?**
15 A. Yes.
16 **Q. And then it says (as read):**
17 **"These data-driven analyzers may**
18 **incorporate a number of models."**
19 **Do you see that?**
20 A. Yes.
21 **Q. And further down it says, "Regression models."**
22 **Do you see that?**
23 A. Yes.
24 **Q. And the data-driven analyzers described here in**
25 **Tran are for tracking a patient's habit. Correct?**

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1 **"Habits" plural.**
2 **I'm sorry. Are you reviewing something?**
3 A. I'm looking at the Trans. Making sure I'm
4 oriented with respect to the Tran reference.
5 **Q. I'll just reask my question more specifically.**
6 **The data-driven analyzers that we were looking at in**
7 **Column 22 starting at Line 33, it states, "May be used to**
8 **track the patient's habits." Correct?**
9 A. Well, it is -- in that Paragraph, in isolation,
10 it's using data-driven techniques to -- to do some
11 processing. But, you know, I'm not considering Tran by
12 itself. I'm considering Tran and the algorithmic
13 approach that it teaches and the benefit of the knowledge
14 of a POSITA in reading Lisogurski and Tran or Lisogurski,
15 LeBoeuf, and Tran, and these techniques POSITA would know
16 how to apply them to improve signal-to-noise ratio.
17 **Q. And in Column -- actually, I'm going to move to**
18 **strike that as nonresponsive. I was just asking you what**
19 **Tran reads.**
20 **Let's go to Column 54, starting at Line 35.**
21 A. Column 54 you said?
22 **Q. Yeah. Column 54, starting at Line 35.**
23 **You see where it reads (as read):**
24 **"In one embodiment, data-driven**
25 **analyzers may be used to track the**

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1 patient's risk of stroke or heart
2 attack."
3 A. Yes.
4 Q. All right. And then the next sentence, do you
5 see where it says, "Regression methods"?
6 A. These data-driven analyzers may incorporate a
7 number of models, such as parametric statistical methods,
8 nonparametric statistical models, clustering models,
9 nearest neighbor models, regression methods, and
10 engineered artificial neural networks.
11 Q. So you see regression models. Right?
12 A. Yes.
13 Q. Okay. Tran does not expressly disclose
14 applying regression models to improve the signal-to-noise
15 ratio of identifying a blood constituent. Correct?
16 MR. KIM: Objection, form.
17 THE WITNESS: Again, I was not opining about
18 Tran by itself. If you'll excuse me, I'll go back to my
19 declaration where I talked about the motivation to
20 combine Lisogurski with Tran.
21 BY MR. CHRISTOPHER:
22 Q. I'm just asking about Tran.
23 A. Right. But I was not opining about Tran in
24 isolation, so I feel I need to respond to how I
25 considered Tran, and Tran I considered in combination,

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1 not by itself.
2 Q. And I'm asking you: Having reviewed Tran and
3 offered opinions on it, Tran by itself does not disclose
4 applying regression methods to improve the
5 signal-to-noise ratio for identifying a blood
6 constituent. Correct?
7 MR. KIM: Objection, form.
8 THE WITNESS: I never opined or offered
9 opinions on Tran by itself. I offered opinions on Tran
10 in combination with Lisogurski or Lisogurski and LeBoeuf.
11 BY MR. CHRISTOPHER:
12 Q. So you have no opinion that Tran by itself
13 discloses applying regression methods to improve the
14 signal-to-noise ratio of identifying a blood constituent.
15 Correct?
16 MR. KIM: Objection, form.
17 THE WITNESS: I opined on the combination of
18 Lisogurski with Tran as a highlight in the declaration
19 that a POSITA would have been motivated to combine and
20 use the teachings of algorithmic improvements for
21 improving measurements.
22 BY MR. CHRISTOPHER:
23 Q. Okay. And please focus on my question. My
24 question is: You haven't offered an opinion that Tran by
25 itself discloses supplying regression methods to improve

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1 the signal-to-noise ratio of identifying a blood
2 constituent. Correct?
3 MR. KIM: Objection, form.
4 THE WITNESS: Correct. I did not opine about
5 Tran by itself in anything that it does by itself. I
6 always considered Tran in combination with Lisogurski or
7 Lisogurski and LeBoeuf.
8 BY MR. CHRISTOPHER:
9 Q. Okay. Can you turn to your declaration for the
10 '475 patent. And when you do, I would like to direct you
11 to the claim construction section and in particular
12 Paragraph 55.
13 A. So you said '457?
14 Q. '457, which is the IPR2025-01254.
15 A. Yes.
16 Q. And I'd like to direct to you Paragraph 55,
17 please.
18 A. Okay.
19 Q. And in Paragraph 55, you write (as read):
20 "I have been instructed that the
21 challenge claims of the '475 patent are
22 to be given their ordinary and customary
23 meaning as understood by one of ordinary
24 skill in the art."
25 Do you see that?

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1 A. Yes.
2 Q. And did you apply -- and then under Paragraph
3 55, you discuss a number of claim constructions for
4 certain terms in the '475 patent. Correct?
5 A. Meaning in subsequent paragraphs,
6 paragraphs 56, 57?
7 Q. Yes.
8 Okay. And other than the terms listed in
9 paragraphs 56 through 66, did you apply the plain and
10 ordinary meaning of each term in forming your opinions
11 for the '475 patent?
12 A. So I'm just making sure I'm familiar with my
13 declaration, that section, so can you please reask the
14 question now?
15 Q. Yeah. Other than the terms that are discussed
16 in paragraphs 56 through 66 of your declaration -- sorry,
17 65 of your declaration for the '475 patent, did you apply
18 the plain and ordinary meaning of each term in forming
19 your opinions?
20 A. Yeah. I mean, plain and ordinary meaning,
21 these are the -- these are the claim constructions; some
22 of which are also -- it says plain and ordinary meaning.
23 You know, these are the constructions that I used.
24 Q. Okay. And are you aware that the '475 patent
25 is involved in a district court litigation matter?

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1 A. No.
2 **Q. Okay. Well, I'll represent to you that the**
3 **patent is involved in an ongoing district court**
4 **litigation matter, and are you aware that the district**
5 **court has issued a claim construction order construing**
6 **certain terms in the '475 patent in March of 2026?**
7 A. Not that I recall.
8 **Q. Okay. And I've mentioned March 2026, which is**
9 **after you executed your declarations. Correct?**
10 A. Correct.
11 **Q. All right. And you haven't reviewed that claim**
12 **construction order from the district court pertaining to**
13 **the '475 patent?**
14 A. Not that I recall.
15 **Q. Okay. Can you turn to Claim 1 of the**
16 **'475 patent?**
17 A. Claim 1?
18 **Q. Yes. Claim 1, please.**
19 A. Okay.
20 **Q. Okay. The first clause of Claim 1 recites one**
21 **or more biosensors.**
22 **Do you see that?**
23 A. Yes.
24 **Q. The next clause recites a light source.**
25 **Do you see that?**

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1 A. Yes.
2 **Q. The next clause recites one or more lenses.**
3 **Do you see that?**
4 A. Yes.
5 **Q. And then the next clause recites a detection**
6 **system.**
7 **Do you see that clause?**
8 A. Yes.
9 **Q. Would you agree that the one or more**
10 **biosensors, the light source, the one or more lenses, and**
11 **the detection system are separate and distinct**
12 **components?**
13 MR. KIM: Objection, form.
14 THE WITNESS: So can you reask the question
15 again?
16 BY MR. CHRISTOPHER:
17 **Q. Yes. We just walked through four clauses in --**
18 A. Yes.
19 **Q. -- Claim 1 of the '475 patent.**
20 **And my question is: Would a person of skill in**
21 **the art understand that those components -- the one or**
22 **more biosensors, the light source, the one or more**
23 **lenses, and the detection systems -- are separate**
24 **components of the invention?**
25 MR. KIM: Objection, form.

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1 THE WITNESS: Well, they're separate claims.
2 They're separate claims of the invention, but, you know,
3 for example, a biosensor would have a light source,
4 likely have lenses that would also -- so a light source
5 and a lens can be part of the biosensor but also be --
6 yeah. So it's -- I mean, if I'm understanding what your
7 question is. I mean, a light source can be part of the
8 biosensor and still meet the -- the claim.
9 BY MR. CHRISTOPHER:
10 **Q. What about the lenses?**
11 A. Similarly.
12 **Q. What about the detection system?**
13 A. The detection system could be part of the
14 biosensor, certainly part of the biosensor. The
15 biosensor includes a detection system.
16 **Q. But even when they're included within the**
17 **biosensor in this hypothetical, the light source, the one**
18 **or more lenses, and the detection system would be**
19 **separate components. Correct?**
20 MR. KIM: Objection, form.
21 THE WITNESS: Well, again, opining on -- this
22 is, you know, discussion goes back, you know, POSITA, you
23 know, Lisogurski, for example, teaches that these
24 components can be separated or combined, and, you know,
25 here I don't -- in this -- the '475, you know, I mean,

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1 the biosensor would include a light source and still
2 be -- you can call it a light -- a biosensor. Lenses
3 could be part of the light source and/or part of the
4 biosensor. Detection system is part of the biosensor, so
5 they're not as discrete elements. When you buy
6 integrated circuits, those are discrete things, but when
7 you talk about a light source, that could certainly be
8 part of the biosensor or the lens.
9 BY MR. CHRISTOPHER:
10 **Q. Can you turn to Independent Claim 8 of the**
11 **'475 patent?**
12 A. Okay.
13 **Q. And do you see where it says "a processor**
14 **configured to" in Claim 8?**
15 A. Yes.
16 **Q. And then underneath that clause, there are four**
17 **Roman numerals.**
18 **Do you see those?**
19 A. Yes.
20 **Q. Each of the four Roman numerals are a function**
21 **that the processor is configured to perform in Claim 8.**
22 **Right?**
23 A. So each of those -- the process configured to
24 do each of those four things, yes.
25 **Q. Yes. That was my question.**

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A. All right. And as I described in my declaration of Lisogurski -- Lisogurski describes, you know, knowledge of a POSITA would certainly disclose all of those elements.

MR. CHRISTOPHER: So I think we're at a good stopping point for today. We'll pick it back up tomorrow morning, but thank you for your time today.

THE WITNESS: Okay.

(Whereupon, at the hour of 2:29 p.m., the proceedings adjourned.)

* * *

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STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

I, CHERYL ASADA, CSR No. 13496, certify: That the foregoing proceedings were taken at the time and place herein set forth; at which time the witness was duly sworn; and that the transcript is a true record of the testimony so given.

The dismantling, unsealing, or unbinding of the original transcript will render the reporter's certificate null and void.

I further certify that I am not financially interested in the action, and I am not related to any of the parties in this case.

Witness review, correction, and signature was (X) by Code ( ) Requested ( ) Not requested.

Dated this 20TH day of APRIL, 2026.

CHERYL ASADA, CSR 13496

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DECLARATION UNDER PENALTY OF PERJURY

Case Name: Samsung Electronics Co.
vs. Omni Medsci, Inc.
Date of Deposition: 04/17/2026
Job No.: 10188949

I, BRIAN W. ANTHONY, hereby certify under penalty of perjury under the laws of the State of _____ that the foregoing is true and correct.

Executed this _____ day of _____, 2026, at _____.

_____
BRIAN W. ANTHONY

NOTARIZATION (If Required)
State of _____
County of _____
Subscribed and sworn to (or affirmed) before me on this _____ day of _____, 20__,
by_____, proved to me on the basis of satisfactory evidence to be the person who appeared before me.
Signature: _____ (Seal)

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DEPOSITION ERRATA SHEET
Case Name: Samsung Electronics Co.
vs. Omni Medsci, Inc.
Name of Witness: Brian W. Anthony
Date of Deposition: 04/17/2026
Job No.: 10188949
Reason Codes: 1. To clarify the record.
2. To conform to the facts.
3. To correct transcription errors.

Page _____ Line _____ Reason _____
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